GLEANINGS IN BEE CULTURE

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EDITORIAL

BY E. R. ROOT.

MR. LESLIE BURR, in the *Review*, says, do not bother with any uncapping-machine, because any average man can learn to uncap, with a regular uncapping-knife, solidly capped combs of honey as fast as any extractor can handle them.

FALL DROUTH KILLING CLOVER.

MR. J. A. CRANE, in the *Bee-keepers' Review*, cites instances where fall drouths had apparently a bad effect on the honey crop, and other cases where in spite of those drouths he had the best honey-flow he ever had. This is one of the things that he can not understand, and there are others in the same state of perplexity.

LARGE HONEY-PRODUCERS CAN'T AFFORD TO REAR THEIR OWN QUEENS.

MR. M. A. GILL, one of the largest honey-producers in Colorado, in the last *Bee-keepers' Review*, says:

> It is utterly impossible and impracticable for the large honey-producer to keep on hand all the laying queens he will need at all times; and even where he has anticipated his needs, and has queen-cells on hand, he will often find that his cells are in one apiary and his need of queens is at another; besides, as there is "many a slip" 'twixt the queen-cell and the laying queen, I have found it profitable to buy queens in a wholesale way, having them arrive at regular intervals, and carry them with me to meet the needs at the different apiaries.

Elsewhere in the same issue the editor gives expression to a similar statement.

THREE NEW IDEAS IN THIS ISSUE.

THERE are three things that we take pleasure in presenting to our readers in this our Christmas issue. First, Dr. Miller's modified treatment of the Alexander plan for curing European foul brood; second, the H. R. Boardman method of preventing honey from granulating; third, the plan of putting up comb honey in the form of individual services before a trade hitherto never reached. We believe that all three of these ideas are something new (or comparatively so) to the general public. We have some more good things to follow during the year 1910, and trust that not only our old subscribers but many new ones will find the journal an indispensable adjunct to their business.

THE NEW OFFICERS OF THE NATIONAL BEE-KEEPERS' ASSOCIATION.

THE following were elected, as shown by the election returns received by Director R. L. Taylor: President, Geo. W. York, Chicago, Ill.; Vice-president, W. D. Wright, Altamont, N. Y.; Secretary, Louis H. Scholl, New Braunfels, Texas; General Manager, N. E. France, Plattleville, Wis.; Directors, J. E. Crane, Middlebury, Vt.; E. F. Atwater, Meridian, Idaho; R. A. Morgan, Vermillion, S. Dakota.

These are all new men—at least no one was re-elected except General Manager N. E. France. Mr. France has served the organization so well and so faithfully that the Association members were wise in re-electing him for the seventh time.

FOUL-BROOD LAWS.

ATTENTION is drawn to a very valuable article in this issue by Dr. E. F. Phillips, of the Bureau of Entomology, on the subject of bee-disease laws and the necessity of legislation in the various States. So many inquiries have come in of late, asking for a model bill to present at the various State General Assemblies that will convene about January 1st, that we asked Dr. Phillips, who has given this matter special attention, not only to submit to us such a model bill as his large experience would indicate was desirable, but also to make some general observations about foul-brood laws and their enforcement. This he has done, and the reader is referred to page 782 of this issue.

RHEUMATISM AND BEE-STINGS.

DURING the last three or four years there has been considerable said in the newspapers regarding the value of bee-stings for the cure of rheumatism. Many clippings have been sent to us, but in most cases we paid no attention to them, as we considered them simply the emanation of a reporter who was hard up for something sensational to fill up space. We have been inclined to believe, however, that in some cases, at least, some forms of rheumatism could be relieved, if not actually cured, by bee-stings to the affected parts. Dr. E. F. Bonney, in a couple of articles in the *American Bee Journal*, and in one in this issue, doubts very much if the stings have any effect whatever. He goes on to explain that rheumatism is a disease that will often disappear of itself without

any treatment. After an application of stings one might conclude, if the rheumatic pains abated, that the bee-stings were the direct cause. In relation to their effect on rheumatism in general, the reader is referred to Dr. Bonney's excellent article on page 784 of this issue.

DISINFECTING HIVES THAT HAVE CONTAINED COLONIES AFFECTED WITH FOUL BROOD.

WE see by the *British Bee Journal* that D. M. McDonald as well as Thos. Wm. Cowan, author of the "British Bee-keepers' Guide," recommends disinfecting hives that have contained colonies affected with foul brood. Another writer, Mr. Soal, in the same journal, while also in favor of it, thinks that our advice to scorch out the inside brown or black is "to depreciate it fifty per cent of its value." If he had followed *all* that we have said on this subject he would have seen we did not advise a charring heat. When we say use a flame until the wood is browned or blackened we mean no more browning or blacking than a little piece of sandpaper would remove with a very little rubbing.

The same writer thinks we are inconsistent when we recommend disinfecting hives, and, in the same breath, shaking the bees from their combs direct on to frames of foundation in a clean hive. If this were done "when even a moderate flow was on, the thin nectar," he claims, "from the diseased combs would shake out all over the bees and also on the new frames or board." Evidently Mr. Soal has been very careless in reading all that we have said on this subject. We never recommended anywhere "shaking bees on new frames or board." We have, however, been quite careful to state that, when the combs contained freshly gathered nectar, they should be *brushed* and not shaken.

OUR CLUBBING OFFERS; A CHANCE TO GET ALEXANDER AND DOOLITTLE WORKS.

Do not fail to take advantage of some of our liberal clubbing offers, as mentioned on our cover. As time goes on, the Alexander writings, now in book form, will stand out more and more brilliantly. Mr. Alexander made no attempt to follow in beaten paths, but he was successful. He discovered a number of new wrinkles, or tricks of the trade. The cream of these, in book form, is available not only to his old admiring friends who eagerly sought his articles, but to the new ones who were not subscribers at the time he was writing.

Then there is that old veteran, G. M. Doolittle, an old standby—always orthodox and reliable. His book, "A Year's Work in an Out-apiary," and the culmination of his ripest experience as a bee-keeper, is also available to our subscribers, either old or new. As the years go on we find there are more and more who follow Doolittle, and who swear by him through thick and thin. The reading of GLEANINGS for 1910 will be made much more valuable and helpful if these two authorities are close at hand.

STEAM-HEATED UNCAPPING-KNIVES.

AMONG the inventions over which the Hutchinson brothers are very enthusiastic in the production of extracted honey (see *Bee-keepers' Review*) is the steam-heated uncapping-knife, and the Beuhne capping-melter as he and his brother use it.

We have been working on a steam-heated uncapping-knife for two or three years back, but as yet we have not made one that just suited us, and hence have not put one on the market, nor said very much about it in print. But we have sent out a number of models to be tested, and among them one to W. Z. Hutchinson, knowing that he would give it an impartial test.

It is our opinion that it is a long way ahead of the cold knife or the ordinary one that must be continually dipped in hot water. When perfected we shall have illustrations showing it.

For the present we may say that steam from a common ten-cent tea-kettle on an oil stove will keep one of these knives *continuously* hot, and, what is of great importance, it is *self-cleaning*, i. e., it does not have to be scraped. As the blade is always hot the cappings slide off like melted butter from a hot case-knife.

HOW TO GET RID OF RATS.

THE United States Government has prepared a bulletin showing that the annual damage by rats runs far up into the millions of dollars. How to save this loss is a real problem with many. It is comparatively easy to catch young rats with an ordinary steel trap, but it is the hardened old sinners that avoid poison and steal the bait away from all kinds of traps without injury, that baffle the long-suffering householder, or, we will say in this case, the bee-keeper. Mice or rats, either, will do an awful damage among a lot of nice combs, and, generally speaking, we advise storing them in supers or hive-bodies, closed at top and bottom.

But we will say the rats are making havoc with the other property of the bee-keeper. Poison is distributed, and the result is that cats and dogs, and even children, are sometimes made victims. Traps are set in various places, but still the depredations of the rodent go on. Every now and then these ugly creatures are seen running from one rendezvous to another. Aye, right there is the solution of the difficulty. A 32-caliber flobert rifle with shot cartridges, or an ordinary shot-gun will destroy these old fellows as nothing else will. But perhaps the farmer or bee-keeper says he has no time to watch. Let him keep his gun handy. If a rat runs into a pile of stuff it is almost sure to come out in a few minutes to prospect again. Get the gun, and watch. When he shows up, give him a dose.

Rats will very often come out just about

sundown, and have a regular playspell back of the barn, or around near the poultry-house, where grain is nearly always available. At such times we have seen groups of four or five get out and play like kittens. When they get together in a close bunch we fire into them. We have killed in this way three rats and wounded two or three more. Now, a *wounded* rat will strike terror among the whole rat tribe. It seems cruel to think of it; but as he goes hobbling along among his fellows he is a constant warning of the fate that awaits the others if they remain. At one time when we were overrun with rats we employed a young man, our watchman in the factory buildings, to shoot them. After he had killed about a dozen, as they ran between the building in the courts, the whole rat tribe disappeared, and were gone for nearly a year.

We also found that we were able to capture quite a number of other rats by means of the old-fashioned box rabbit-trap with a set trigger. Almost every farmer's boy knows how to make it. A handful or so of grain is thrown into the bottom of the trap. The long wire trigger, without bait, should be made to reach clear down just over the pile of grain. As Mr. Rat comes in, his tail will brush the trigger and down will go the sliding door. The strange thing about it is that a trap of this sort will catch old ones as well as the young ones. We have caught in this way as many as three at a time. The trap is then put into a tub of water and the rats drowned.

There is no reason in the world why one should be pestered with this nuisance year after year. If the farmer or the bee-keeper will just make up his mind to get rid of them he can do so by using the rabbit-trap or shot-gun. We have killed and wounded a good many with a little flobert rifle. One can purchase 22 and 32 shot cartridges that can be used in little rifles of this sort. From a humane point of view it is better to use the larger bore. Better still, use a 44-caliber smooth-bore shot-gun, and cartridges with No. 8 shot. These little shot-guns are made especially for taxidermists. The price is about $10.00. Should your local hardware man not be able to procure one of them, write to the W. Bingham Company, Cleveland, Ohio.

We are informed that the 44-caliber taxidermist shot-gun is the most effective shot-gun made. It makes comparatively little noise; and if the rodent is shot in a barn the charge does not tear up the floor. The ordinary 10 and 12 gauge shot-guns do awful execution at close range, and it is not practicable to use them inside of a building, while a 32 lobert for a 44-caliber taxidermist shot-gun does very good work. The flobert is rather light, and sometimes will not do much more than to wound the rat. While it accomplishes its object to a great extent, it is better to give Mr. Rat a killing load if possible. There will be enough wounded with the better guns to bring about all the scare that is needed.

STRAY STRAWS

BY DR. C. C. MILLER

WOOD ASHES are said to drive ants away. —*B. Vater*, 275.

IS SWEET CLOVER in general hardier than alfalfa? Here it was still green after alfalfa foliage was frozen dead.

DON'T FREE imprisoned nuclei at a time when other bees are playing, else the call will attract them to other hives.—*Schweiz. Bztg.*, 335.

THE QUEEN is put into the cage after the bees, page 671. We put the queen in first. Which is better? [It is a matter of individual taste.—ED.]

IF YOU USE a jar or pail turned upside down over a shallow dish as a feeder, be sure that there is not room for a bee to crawl under the lower edge of the jar or pail. In that case I've seen bees carried up by the bubble of air and drowned.

THE CHICAGO convention, Dec. 1, 2, was, as usual, fine, only it did not seem quite right without a single Root there. [We were very sorry not to be in the city, but another appointment made it practically impossible. The holidays are usually busy times with us at Medina.—ED.]

IF I UNDERSTAND page 701 correctly, a good outdoor winter entrance is ⅜ inch deep and 1 inch in width for every comb that is covered with bees. [We had not thought of it before in that light, but that is about right, according to our experience at Medina. Possibly the ratios would have to be changed for different localities.—ED.]

QUOTING from GLEANINGS, 575, *Bienen-Vater*, 295, says that a queen born June 19 began laying the 20th. The readers of *Bienen-Vater*, upon reading that, will say, "A queen laying when one day old! What liars those Americans are." No doubt it is an error of the German compositor. GLEANINGS said she began laying the *30th*.

I'VE KNOWN for a long time that a very young virgin will be kindly received in *any* colony—queenless or queenright—and have been anxious to know how long her youthful innocence continues. D. M. Macdonald says, *Irish B. J.*, 68, "The period of safety may be said to pass with the third day of her life after leaving her natal cradle."

C. W. DAYTON, you practically say, p. 708, that bees are not inclined to gather honey when they are not in immediate need of it. Out upon such naughty talk! According to that, the Dadants, who leave all honey on until the close of the season, ought to have very poor crops. As a rule, my colonies that have the most honey, and so "are not in immediate need of it," are the very ones that hustle the hardest to get more.

UNCLE SAM gets something more than $200,000,000 out of the liquor business. According to the report of the Committee of Social Betterment of Roosevelt's Home Commissions, the estimated annual cost of crime

due to alcoholic liquors is $420,000,000. Costs about twice what it comes to! That's hardly business in Uncle Sam. [We don't believe that Uncle Sam will stand for this thing long. It may take him ten years; and while he may be slow, he is sure.—ED.]

BEE-KEEPERS say the pure-food laws now prevent purchasers of honey from getting stung.—*Chicago Daily News.* [The phrase "get stung" originated, we are told, during a hot political campaign in Toledo, of this State, and from that point it spread throughout the United States. Politically "get stung" means being turned down by the people or the party. In a general way it has come to have the significance of bad luck; or, if one does not "get stung," every thing is going lovely. While the phrase is pure slang it comes in very pat sometimes.—ED.]

CELLARED my bees November 18. It looked then that no more flight days might come; but since that time it has been mild, with several days warm enough for bees to fly. But if I had it to do over again I would do exactly as I did. The chances were much in favor of its being cold; and if the bees had been left out two weeks or more, and then taken in without a flight, it would have been rather hard on them; whereas two weeks longer confinement in the cellar is not so great a matter. Such a warm fall may not come again in many a year.

MORLEY PETTIT, Provincial Apiarist of Ontario, has been looking up what our experiment stations are doing in bee culture, and, according to his report, *Canadian Bee Journal*, 400, the showing is pretty poor. The work at Washington, under Dr. Phillips, of course takes the lead; but Kentucky, Tennesee, Maryland, and Texas are the only States reported as doing any thing. Michigan, where such fine work was done under Prof. Cook, hadn't had a bee for ten years. Are we overestimating the importance of bee culture, or are the experiment stations underestimating it?

L. S. CRAWSHAW says, *British B. J.*, p. 398: "I see that E. R. Root recommends that trapped robbers be destroyed; but I have kept them confined for several days, or a week, introducing a queen in the meantime, and later treating as a nucleus with success. In fact, I have often made nuclei by the simple process of allowing the trap to replace a stock for a short time." Quite a convenient way to make a nucleus, only the field-bees that would be caught would hardly make a good nucleus in which to have a virgin fertilized. But likely he puts the nucleus-hive to catch the bees at a time when the young bees are out for a playspell, and then he's right.

CEMENT is the material for the coming hive-stand, according to the report of quite a number at the Chicago convention. Some make a plain slab two inches thick and large enough to hold the hive, using also the same slabs to make sidewalks. Some have merely a rim, and some straight sticks. Possibly the best of all is the slab with a cement block at each corner to raise the hive an inch or so. That keeps the bottom-board dry, making it last longer. My stands are mostly of fence boards lying flat. I can hardly think of any thing worse unless to have wider boards. The bottom-boards soon rot, and there is a fine shelter for the big black ants that honeycomb and ruin them.

A HIGHLY APPRECIATIVE notice of the French edition of the A B C of Bee Culture, *Schweiz. Bztg.*, 439, ends by saying, "And we are surprised to see the American authors so well informed concerning European conditions." As this is said by no less an authority than Dr. Kramer, said authors ought to feel much complimented. [This notice coming from Dr. Kramer is certainly appreciated by the authors. We have continually sought to pick out the best man we could find to write special articles. For example, the edition for 1910, now in the press, will have no less an authority than Dr. A. Hugh Bryan, of the Bureau of Chemistry, Washington, D. C., to write up all articles like "Glucose," "Adulteration," "Nectar," "Sugar," and the like. W. K. Morrison, now at San Diego, California, wrote the article on "Hives; Evolution of." He also made various additions to certain articles, so that they would conform to the best practices in Europe. It is fair to give credit to Mr. Morrison for this.—ED.]

EDITOR HUTCHINSON is after you slack-wirers with a sharp stick. He says: "Put in wires to keep the foundation from sagging; then leave them slack so it *can* sag! Why use the wires at all?" He wants the wires taut, taut. [Something over twenty years ago, when horizontal wiring first came to the front, we suggested as a remedy for buckling of the foundation between the horizontal wires, not drawing the wires quite so taut as had been done. This cured the difficulty, but allowed the foundation to stretch slightly, and at the same time the individual cells to elongate on a vertical line. For the last nineteen years (see GLEANINGS, March, 1890) we have advocated drawing the wires taut. Referring to the method of how to string the wires in a frame our directions that have stood without modification for years say: "Taking up the slack is accomplished in the manner as shown in the cut. Hold the frame between the table and the body, and with the left hand bear gently on each wire until the slack is all in the last wire. This is, of course, now taken up by the pliers in the right hand. When the wire is taut the end is twisted around the tack head and secured." Our esteemed contemporary says the "directions" to leave the wires slack "riles" him. If there are any printed "directions" going out with the frames or wire from any dealer or manufacturers advising slack wiring we have not run across them. Possibly Mr. Hutchinson had in mind the article by E. D. Townsend in our issue for May 1, page 281, of current volume. —ED.]

BEE-KEEPING IN THE SOUTHWEST

BY LOUIS SCHOLL, NEW BRAUNFELS, TEX.

To old and young a merry Christmas and a happy New Year. May the coming year be a profitable one to us all in the things we may do and the lessons that we may learn.

THE 1910 CENSUS.

It is unfortunate that the census will be taken during the next year, since our present year has been a very unfavorable one, taken as a whole, all over the United States, for the production of even an average crop of honey and wax; consequently the census figures will not show up the bee-keeping industry as they should. The Texas crop has been barely half of the average. This will make a material difference in the census figures. These conditions exist similarly in other States. For Texas, at least, it is my candid opinion that it would be safe just to double the figures for a true estimate of the real output of honey and wax in an *average* year.

SOME PLANS FOR 1910.

The past year has been the busiest that I have ever experienced, and I fear that my editorial work has not been just what it ought to have been—at least it has not been as good as I intended to make it. Judging, however, from the many letters that have been sent me, and from the statements of the friends whom I have met, I believe that "Bee-keeping in the Southwest" is being more and more appreciated. For this reason my intention is to make this department of more interest during the next year. Our experience with twenty apiaries of bees, which compelus to adopt short methods and up-to-date equipment, should enable us to give to the readers items which will not only be new and interesting, but profitable as well. Beginning with the new year I shall try to describe our operations right through the season with a large number of out-apiaries, using the divisible-brood-chamber hives, and producing bulk, comb, and extracted honey. In this way the many questions that have been asked will be answered fully.

THAT THICK MIDRIB.

Dr. Miller and the editor deserve a good "swat" for trying to tell me how to use that comb with a midrib half an inch thick so as to make full-grown bees emerge from those small cells by spacing the combs further apart and allowing the bees to elongate the cells. Who ever heard of any thing like this? Here are the facts: The comb was in a brood-nest between straight combs, spaced the natural or regular distance. The midrib of this comb was half an inch thick on account of the age, and the cell walls were thicker also. The cells were, therefore, too small to allow full-grown bees to hatch from them. The large numbers that did hatch out were but little more than half the size of their sisters. These are the facts, and I am convinced that combs, sometimes at least, as in this case, become useless as brood-combs if left too long in the brood-chamber. Now, what has spacing the combs further apart to allow the bees to elongate the cells to do with the facts? Surely, if the combs got into such a condition the bees would be powerless to spread them. It is impossible to tell how old such combs must be, for I do not know how old this comb of mine was. I believe, however, that it was more than thirty years old; but how much more I do not know.

AUTOMOBILES FOR THE BEE-KEEPER.

A few years ago automobiles were considered impractical for the apiarist. Now there are numbers of bee-keepers who are using them to great advantage. With a series of outyards and reasonably good roads it is no trick at all with one of these machines to manage twice as many colonies as before. It is not only tiresome but most aggravating to jog along with an old-style wagon and team when one is needed at every yard at the same time. It is then that the long-felt want is most apparent, and it becomes worse when some other fellow passes by with the thing you "auto" have, and leaves you behind.

With outyards twenty miles away it is necessary to drive eight hours in hot weather, and there are two hours left for work on that trip. With the machine the time would be just reversed—two hours for the trip and eight for work, if ten working hours are figured for the day. Furthermore, with a team it would be cruel to misuse the animals for many such trips; but the automobile, if kept in good working order, would always be ready to go instead of being tired out. Furthermore, the danger of horses being stung would be done away with.

Bee-keepers generally should more readily learn to manage and care for automobiles than men of any other class, because of their practical knowledge of machinery, etc. The automobile not only brings the bee-keeper and his bees closer together, aiding him to be a more successful and extensive bee-keeper, but it brings him closer to his neighbors and closer to the markets. It aids both in social as well as in business affairs. One or a dozen miles cuts but little figure with the owner of one of these machines, and he can get more profit and more pleasure out of life. The time is not far distant when every up-to-date bee-keeper will own an automobile.

The question here naturally arises, "Which is the best automobile for the bee-keeper?" Since this is an interesting topic, we should be glad to have articles giving further light on the subject. A few have appeared; but let us consider the best type of motor vehicle for apiarian use.

SIFTINGS.

BY J. E. CRANE, MIDDLEBURY, VT.

That method of hiving a swarm automatically, by Chas. E. Adams, p. 336, June 1, seems to me the simplest by far, and most satisfactory that I have seen; but in large yards it might not work so well.

On p. 622, Oct. 15, an abundance of clover bloom is predicted for 1910. Clover is now in much better condition here than it was a year ago. I believe there is no way in which we can increase the yield of honey more surely than by stimulating the farmers to sow alsike clover seed.

Yesterday I went to look over a small apiary for a neighbor, a mile and a half away. I found his colonies averaged twice the amount of winter stores that my own colonies did, so that, being outside of the range of my bees, the small number of colonies had a larger proportion of pasturage than my colonies had.

I believe that the conclusions of W. F. Cox and F. Greiner, pages 631, 632, Oct. 15, in regard to the value of excluders, are correct. In one yard of 100 colonies where extracting-supers and excluders were used this year, I found practically all of the honey above the excluders, although there was an abundance of room below. [See letter by Elias Fox on page 762 in this issue.—ED.]

On page 369 Mr. Byer tells of the injury to stock by feeding on alsike clover. Although this clover grows very extensively in this section I have never before heard of its injuring stock. Is not the fault that of the white-nosed horses rather than of the clover? May be their noses would crack if they fed on other clovers alone. Hereabout, alsike clover is thought to be far better than red clover for all kinds of stock.

On page 622, Oct. 15, I see no objection to putting baits in corners. I have sometimes used the outside of the super from corner to corner for baits. I think they are better on the outside than in the center; for, if placed in the center, bees are often induced to fill the baits before they are strong enough to do much more; but if the baits are on the sides of the super, the colony is usually strong enough to do good work all through the super after they once begin on the outside.

Friend Foster, page 455, Aug. 1, says that shipping-cases that have ⅛-inch space between the tops of the sections and the covers are a better protection for honey than those in which the sections are flush with the top. He is right so far as the better protection is concerned, but I wonder whether he thinks this is enough for these thin factory-made basswood cases. I have just stepped on an empty case and found that the cover bent down 1½ inches in the center. It would be better to have more space above the sections than ⅛ inch, or else have the covers made thicker, or avoid stepping on them altogether.

That is a pretty good record, p. 621, Oct. 15—2873 queens reared in one season by one man and a small boy. There are some things some of us would like to know. How many colonies of bees did it take, and how many nuclei? [There were about 75 colonies in the spring. When queen-rearing operations were under full sway we had 170 twin nuclei, or 340 in all. Bees for some of these were drawn from the other yards; but most of them were supplied from the 75 colonies referred to. As to how these nuclei were made up, see Nov. 1st issue, page 667.—ED.]

UNITING IN THE FALL.

On page 593, Oct. 1, Mr. Doolittle tells us how to unite bees in the autumn days. His plan means too much work when the yards are five or ten miles from home. I have had little difficulty after the cool weather comes and the bees are clustered closely, by just shaking them together in one hive. The cool air seems to take away all disposition to fight, and the new comers are always welcome, as they help to keep up the warmth; but I rarely try to unite queenless colonies, as I do not consider them of much value if they have been without a queen for some time.

THE PROPER DENSITY OF SYRUP.

You are quite right, Mr. Editor, page 589, Oct. 1, in advising syrup made of two parts of sugar to one of water. There is a waste in reducing if much thinner syrup is given, and the bees take it too slowly if it is much thicker.

On p. 590, Dr. Miller says he has fed over one thousand pounds of sugar this year. We have beat you, doctor. We have had to feed some eight thousand pounds and one thousand pounds of honey. This meant some work, since most of our bees were from three to ten miles from home.

BROOD-CHAMBERS CROWDED WITH HONEY.

On p. 592, Oct. 1, friend Holtermann objects to the way Wesley Foster and Dr. Miller manipulate their supers, as his experience is that such methods crowd the brood-chamber with honey. Oh, my! but wouldn't we like a little of such experience? When I began bee-keeping I used to worry about the brood-chambers getting crowded with honey; but after more than forty years of experience with hundreds of colonies I have never known of a colony seriously injured by having too much honey, but have known of hundreds that were injured by having too little. I have removed many queens the last of June and July so that my bees would fill their combs with honey rather than with brood.

CONVERSATIONS WITH DOOLITTLE

AT BORODINO, NEW YORK.

"Mr. Doolittle, I told my friend Mr. Barber yesterday, that, if he would give his children honey instead of butter to eat on their bread, it would be better for them. Is this right?"

"Well, Mr. Jones, honey is now much cheaper than butter; and if those who can not afford both would eat honey, especially in the case of children, it would be an advantage as far as health is concerned, and they would like it better."

"My next question is, don't you queen-breeders ask too high a price for your queens which you winter over and sell in the spring?"

"Mr. Jones, you are too good a bee-keeper not to know that, to remove laying queens in the early part of the season, is a very costly procedure, and that in most cases some delay must occur in getting them replaced; consequently much brood is lost at a time when every effort should be put forth to secure a large number of bees for the white-clover harvest. At 10 cts. a pound it would take only 25 pounds of honey to make the difference between a $5.00 queen and a $2 50 queen; and every one would call it a bargain to get a breeding queen at the latter figure. It is my opinion that queens can not be changed in the best colonies in May without a loss of 25 pounds of honey."

"Is there any difference in the method of superseding queens in blacks and Italians?"

"In a black or German colony, in case the queen dies from old age or any other cause, the bees at once proceed to replace her by converting a worker larva into a queen, partly by the rich food called royal jelly, and partly by constructing a queen-cell over this larva, which is then floated out near the mouth of the cell on this royal jelly. With Italians there is a difference; for, from close observation, I find that most of the queens of this race are superseded before they die; for as soon as the bees find out that the queen is beginning to fail in egg-laying they build queen-cells in which the queen lays, and from these eggs young queens are fed and reared almost like those in colonies that are preparing to cast a prime swarm."

"Do you consider queens as reared by the Italians better than those reared after the old queen is dead, as in the case of blacks?"

"I certainly do, and I am not alone in this matter; for nearly all practical bee-keepers are agreed on this point. Such larvæ are intended for queens from the very start, and are thus fed lavishly during the whole larval period."

"In your opinion, what is the most important thing for a bee-keeper to study?"

"I do not know just what your question is intended to cover; but I would say this—there is no subject of more importance to the bee-keeper, nor is there one that gives him more pleasure, than the study of the honey-producing plants No matter whether a flower blooms in the garden, field, or forest, it at once becomes an object of interest if the bees gather honey from it. Upon the amount and duration of honey-producing plants in the vicinity of an apiary depends the success or failure of the enterprise. In locating an apiary for honey production one should have an eye to the amount of bee forage in reach of the apiary, for no amount of labor and skill will produce results where there is no source of supply.

"The labor of cultivating the crop, rental of the land, the uncertainty of securing a yield after it is grown, all tend to discourage one from the cultivation of any plant or tree wholly for honey. Good management, however, with land and bees, even in our more densely populated States, makes both lines of work profitable. Fruit-trees yield nectar, and the fruit is a paying crop as well. White clover is a great honey-producer, and provides the best of pasturage for stock. Alsike clover is equally great as a honey-producer, and is nearly equal in value for hay to any of the other grasses. Buckwheat yields both honey and grain. Raspberries are also valuable in both ways. For shade, honey, and timber, we can plant basswood, maple, locust, willow, and other trees. Then, too, various kinds of honey-producing plants can be grown for the seed, which is always in demand. The obstacle in the way of growing trees in quantities is the magnitude of the investment and length of time required before any profit can be realized; yet, notwithstanding this, a few of our apiarists are setting out basswood groves, feeling sure that such a course will pay in the end.

"Proximity to a forest of maples, basswoods, and other honey-producing trees is very desirable. If the apiary can be on the southeast side of such woodland, so much the better. White and golden willows are great in utility, as they produce the first early honey. Fruit-trees should abound; and if woodland clearings are within the range of the bees' flight, covered with wild raspberries, an abundance of this honey can be secured. White and alsike clover should be plentiful, and buckwheat should be grown to a great extent. In some localities, goldenrod, asters, and other fall flowers produce considerable honey. Probably no one locality could be found having all of these; yet if several do exist, so as to make a continuous season, the locality is a desirable one. Care should be taken not to locate in valleys subject to late frosts, nor near large bodies of water or swamps. In hilly countries bees thrive best in some sheltered spot midway between a valley and a hill top. Clover, basswood, and buckwheat are the three great honey-producers of the Northern States; and where they exist in profusion, failure seldom occurs.

"Do not locate an apiary where the field is already stocked with bees, for it is an injustice to the former possessor, which injustice you would resent were you in his place; besides, such a course would also injure your own prospect for success."

GENERAL CORRESPONDENCE

SOME "DISCOVERIES" ON THE ALEXANDER TREATMENT FOR EUROPEAN FOUL BROOD.

Dr. Miller's Modification an Apparent Success.

BY DR. C. C. MILLER.

When I began treating foul-broody colonies last summer I piled the brood of four colonies over an excluder on a fifth colony, this fifth colony being equally foul-broody. At the end of three weeks the combs over the excluder would be emptied of brood and ready to melt up. But the combs in the lower story would be as bad as ever. Then a new set of piles would have to be made; and, no matter how many times this would be repeated, there would always be left the foul-broody lower stories. Then it occurred to me, "If there is any thing in the Alexander plan, and if bees queenless three weeks will clean out their frames, why will they not clean out the frames in these upper stories? It's worth trying, any way."

So when the piles had put in their three weeks, this is the way I did: I took the whole pile off its stand. On the stand I put the second story — that is, the story that had been immediately above the excluder. Into this I brushed the colony — that is, the bees and queen that had been in the lower story. In most cases this was an entire success, the colonies being and continuing entirely healthy.

So here was what may possibly be an important "discovery," — with apologies to A. I. Root for the use of the word. The discovery is that, at least in some cases and under some conditions, a diseased colony with a queen may clean out combs over an excluder so that they will be entirely healthy. But if any credit is due for this discovery, the chief credit belongs to our good friend the late E. W. Alexander; for without his lead I never would have thought the discovery possible.

Possibly some do not know what the Alexander plan for the treatment of European foul brood (black brood) is. It takes but a few words to tell it. Make a colony strong; make it queenless, and let it remain queenless three weeks; then give it a vigorous young laying Italian queen. That's all: the bees do the rest.

THE ALEXANDER PLAN NOT SUITABLE FOR AMERICAN FOUL BROOD.

I desire to record here my belief that, in giving us this plan of treatment, Mr. Alexander has given us something of real and lasting value.

Failures with the Alexander plan, I believe, have been reported. It is possible that with it there will always be more or less failures. It is just possible, also, that, where failures occurred, Mr. Alexander's teachings were not strictly followed. Were the failures with European foul brood, or with American? Mr. Alexander never insisted that his plan would succeed with American foul brood, although I believe he thought it might do so.

I very much doubt that it will often, if ever, succeed with American foul brood. In European foul brood the dead larva dries down in the cell in such a way that it is not so very difficult for the bees to clean it out entirely. In American foul brood the dead larva dries down upon the cell-wall like so much glue, impossible of removal. At least that is the way I understand it.

THE COLONIES SHOULD BE STRONG.

Another cause of failure may have been from failing to note or sufficiently emphasize Mr. Alexander's instruction to make the colony *strong*. A weak and discouraged lot of bees should not be expected to do very vigorous work at cleaning out their cells, especially when queenless.

Mr. Alexander found that a strong force of bees would clean out their cells provided they were rearing no fresh brood to keep up the infection. I went just a step further, and found that such a force with a queen would clean out combs to which they, but not the queen, had access.

A VARIATION OF THE ALEXANDER PLAN.

The last performance I have mentioned — taking away the pile and leaving the colony in what had been the second story—still left the lower story with its infected brood to be dealt with. There were several of these, and upon them I tried another variation of the Alexander plan. Upon a new stand I make a pile of them, four or five stories high, taking with each enough bees to care for the brood, also a few extra to make up for the bees that would return to their old stands. Understand that each story contained a full quota of brood in all stages from the egg to the young bee just emerging, but there was no queen in the pile.

Of course, queen-cells were started. In ten days I destroyed all of them, and put in the lower story a virgin of choice stock. There was an excluder over the first story, for the purpose of confining this young queen to the lower story. In about three weeks from the time the pile was formed, the queen was laying in what generally proved to be clean combs.

It is possible, if not probable, that wherever the bees did not clean out the combs perfectly it was because they were not strong enough. At any rate, if it were to do over again, not so many colonies would be thrown on foundation, and more would have the Alexander treatment. But I would certainly continue the variation of giving the young virgin in 10 days rather than a laying queen at the end of 21 days. Many a time I have noticed in a nucleus having a young queen not yet laying how the workers polish out the cells before she begins to lay. In-

deed, if I find the cells well polished I feel almost as sure a queen is there as if I saw the queen. Now, it seems to me that it must make quite a difference whether the bees are left utterly queenless for twenty-one days, or whether in the last ten or eleven days they have a virgin. After being queenless for ten days they begin to feel discouraged and inclined to let things go at loose ends; but let a virgin enter upon the scene and they are wide awake to clean up in preparation for the work they expect her to do.

This is not all I know about foul brood, but is, perhaps, enough for the present on such a malodorous subject.

Marengo, Ill.

[We are not sure but Dr. Miller has made some real discoveries in the treatment of European or black brood. His modified form of Alexander treatment looks reasonable, and the fact that he has been largely successful with it commends it to our thoughtful consideration.

When Mr. Alexander some years ago showed us how his whole apiary that had been treated on his plan was all healthy, notwithstanding there were yards of bees in the locality that were rotten with the disease, we felt convinced that he had something that was good. We accordingly paid him $50 to make the details of the plan public, and this he did. But one or two of the New York inspectors apparently believed there was nothing in it—that the disease in the Alexander apiary had run its course, or, rather, run out. This feeling was apparently shared by Dr. E F. Phillips, of the Bureau of Entomology; but nevertheless we had faith in the plan, but thought it not wise to say very much about it until we could secure further reports. Either the original Alexander treatment or the one modified by the sage of Marengo is very simple, saves a lot of time and material, requires no destruction of brood or combs, and the only loss, apparently, is the entire suspension of brood-rearing in all stages for a period of three weeks. The McEvoy treatment involves considerable work, the purchase of foundation, the melting-up of otherwise good combs, the building-out of combs from starters, melting these up again, and compelling the bees to build comb again from starters or foundation. The actual cost of this treatment in time and money is considerable; and while we do not go so far as to say that the Alexander plan or Dr. Miller's modification is going to be a success, we do think the possibilities are such as to merit our consideration. To that end we should be pleased to get reports from those who have tested the original Alexander treatment, and in addition we should like to hear next summer from those who are in position to try Dr. Miller's modification.

In this connection it would seem that Dr. Miller's idea of introducing a young virgin in 10 days rather than a laying queen in 21 days is a decided improvement. While we are not sure, we believe Dr. Miller is right in supposing bees will do a better job of polishing in the cells when there is a virgin in the hive than when they are hopelessly queenless. It looks reasonable that they should do so.

We have already had a few favorable reports and some unfavorable ones of the original Alexander treatment; and it is possible that the last named were due to the fact that the colonies were not strong enough.

It is true that Mr. Alexander did not make the claim that his treatment would cure the old-fashioned or American foul brood; but one or two of his disciples have made that claim.—ED.]

FOUNDATION IN SECTIONS.

The Extra Thin Makes but a Slight Midrib.

BY F. GREINER.

As to the use of full sheets of comb foundation in section boxes (pages 528, 604), a practice I have never felt like endorsing, I want to add that, sometimes, under very favorable conditions, the extra-light section foundation is well worked out, and can scarcely be detected in the finished product. At other times the same article becomes quite objectionable. My good friend Dr. James Moss, minister of the M. E. Church in Naples, is taking some interest in bees and honey of late. He was taking dinner at my house lately, and on this occasion I showed him the difference between genuine virgin comb honey and that with fishbone or backbone in it. I also explained to him how profitable it would be for me to use full sheets of foundation in all my sections; and also the position I took in regard to using the artificial midrib.

"Well," he said, "don't stand in your own light, brother G. Use the midrib."

I did not intend to say any thing about this, but it is out.

Dr. Miller rather excuses himself for using full sheets of foundation in sections by saying he would have to use queen-excluders under supers with starters only. With us it rarely happens that queens go up into the supers, even when the brood-chambers are reduced to six or seven L. frames. When the contraction is carried any further we have trouble; but even then, more with pollen than with brood. I would hardly expect less pollen were I to use full sheets of foundation in the sections instead of mere starters. The tendency would be the other way, I judge.

Bee-keepers in Germany are still taking a very firm stand against the use of foundation in comb honey. This may be due in part to the fact that many bee-keepers over there make their own foundation with the Rietsche press. They can not make as delicate an article as is made in the United States by the regular manufacturers, and it is quite likely that very many of the Germans do not know how fine a product is used here in sections by the large majority of honey-producers who are using foundation. Possibly their

opposition might disappear were they acquainted with our extra-light section foundation.

THE PROPER WAY TO EXHIBIT COMB HONEY AT FAIRS.

As in former years, I had occasion to see the honey exhibits at several agricultural fairs this year, and in every case almost all the exhibited comb honey was unduly exposed to dust, flies, and insects in general. Where the rules and regulations demand an exhibit of 250 sections in the general display, and every section exposed to view, as is the case at the New York State fair, it would entail too heavy an expense for the exhibitor should he have to show his honey under glass. The managers of the fair should provide suitable glass cases for these exhibitions. For my part I should not like to exhibit and expose to dust and flies so large an amount of honey for a week or two, even if I were sure of carrying off the first premium on my exhibit. The fact that a certain lot of honey has been awarded the first premium at a great show may be a recommendation of some material value; but the accompanying circumstance of eight or ten days' exposure to flies and dust would detract much from that value. In some of our best and most frequented grocery stores I have observed comb honey very carelessly exposed to dust and flies, while in others the flakes of honey are left in the glassed shipping case, or are displayed in a neat glass case as it should be. It pays to be neat in any kind of business; and particularly in our honey business neatness must not be disregarded.

I have usually shown my comb honey in a large glass case, and in small specially designed single-row glassed cases, showing practically all the comb. I have also shown the single sections when they were glassed on both sides. This last is a very good way providing such glassed honey can be sold by weight afterward, glass to be paid for as honey.

CLEANING OUT EXTRACTING-COMBS.

In an article I wrote for the *American Bee Journal* a short time ago, in which I described and illustrated my method of having extracting-combs cleaned out, etc., and which the editor commented on, page 653, as well as Dr. Miller in the next issue, I referred to the combs as they came from the extractor "wet with honey." It would be reasonable to expect the bees to clean out any combs containing *unsealed* stores. My bees have always been prone to take sealed honey out of combs under similar conditions, and I would not expect them to do a thorough job if it were sealed honey placed in stacks of supers back of a hive.

In order to have sections that are partly filled with honey, both sealed and unsealed, cleaned out without injuring the comb, Mr. Danzenbaker advised once at a bee-keepers' convention that we pile them up before the entrance of a hive during a warm night. I have so far preferred to stack up the supers containing such honey somewhere in the bee-yard upon a bottom-board, covering with a close-fitting cover and giving a small entrance. This is less work for me, and we run no risk of having such bait sections spoiled by rain during the night. They may thus be left out as long as is convenient, or it is convenient to take them in.

BUYING CARBON-BISULPHIDE CHEAP.

Up to within a year or two the price I had to pay for bisulphide of carbon was 35 cents per pound. This was not only excessive, but it was more—it was prohibitory, as I could obtain practically the same result for not much more than one-tenth the cost by using sulphur. Of late I bought the sulphide at $1.00 per gallon (about 11 pounds), and 45 cents express from the city. At this price I can stand it to use it in the fumigation of comb honey and combs. It stands to reason that, the smaller the space is to be filled with fumes, or, rather, the more combs we can crowd into a certain space, and the nearer we can shut up every thing, guarding the escape of the fumes, the more successful we shall be in doing the work cheaply as well as effectively. I do not know of a more practical plan than to stack up the supers eight or ten high, placing the liquid in a saucer on top in an empty super, or, better, a shallow ring, covering all up as tight as I can. It is really the same method I practiced for many years when I was using sulphur, with the exception that I used a full-depth hive-body on top to burn the sulphur in. When I practiced this method, sometimes I had the hive-cover scorched a little on the inside, but had never a fire started. It is a method I still use at times. It is the cheapest, even with the bisulphide of carbon at $1.00 per gallon.

Naples, N. Y.

QUEEN-EXCLUDERS, NOT HONEY-EXCLUDERS.

Evidence to Show that Honey Brought in by Field Bees is Not Transferred to the Young Bees to be Carried to the Cells; Honey Above Excluders the Only Pure Honey.

BY ELIAS FOX.

In reply to W. F. Cox's article on the use of queen-excluders, page 631, Oct. 15, I desire to say just a few words. Only a few years ago I gave a report of one colony giving me 125 lbs., stored above a queen-excluder in, I think, something like three weeks. Last year I reported one colony giving me 425 lbs. of surplus for the season. This also passed through a queen-excluder and was stored in three full-depth extracting-supers. I think they are *all* wrong when they say the field bees deliver their loads of nectar to nurse-bees to be stored in the surplus cells, or store it in the brood-chamber later to be transferred above. This is all bosh. Bees are more consistent and economical of time and labor. True, I have often seen the young bees receive honey direct from the incoming field-bees; perhaps one in ten

thousand might unload this way if it *does unload;* but in all of my observations it always occurred to me that only enough for a meal was taken by the young bees, and the field bee would then deposit the rest in a cell.

As to storing in the brood-chamber to be transferred above, suppose the honey is coming in at the rate of 12 to 15 lbs. a day, the brood-frames are partly filled with honey, nearly all of which is capped, and the rest solid full of brood in all stages—from the egg just deposited to the mature bees just gnawing out, and the queen is depositing eggs in every available cell nearly as fast as the bees emerge therefrom, and cells are cleaned and prepared to receive them. Did you ever ask yourself this question, "Where could 12 to 15 lbs. of honey be stored, in the brood-chamber?" No, sir. The honey goes direct to the surplus-chamber. I believe I have given this as much thought and observation as any man living, and have noticed thousands and thousands of bees unloading with wings worn nearly to fragments. Give us facts and queen-excluders.

I would about as soon be without bees as without excluders. While it is a fact that, where excluders are not used, and the honey is extracted while the brood is in all stages, thousands of the larvæ are also extracted, and many of them mashed and contents taken up in the honey. The quantity of matter is so small, comparatively, we do not see it, neither do we taste it; but *it is there just the same.* Consumer, how do you want the honey you eat—in its purity or slightly mixed with dead larvæ? Give me mine stored above the excluder.

Hillsboro, Wis., Nov. 1.

BREEDING STRONGER QUEENS.

Grafting the Larvæ Twice in Order to Secure an Abundance of Royal Jelly.

BY J. W. GEORGE.

I will give something to your readers that may be worth considering, especially the queen-breeders. I don't claim to be the originator of the idea, neither do I claim it to be new; yet I have never seen it in print, hence I think it will be new to some. Mr. John Nekhert suggested the idea, and Mr. Henry Perkins developed the practical system.

We know that, to develop the *best* queen, she must have an abundance of food in a strong colony of bees, and a poor queen *vice versa.* It is an easy matter to get a strong colony of bees; but to *force* them to feed the royal larvæ abundantly is not so easy—hence the Nekhert-Perkins method.

The plan is simple, but requires a little more work than the ordinary method. It is nothing more nor less than a double graft. Mr. Perkins prepares his cell cups in the ordinary way, and grafts just as if he intended that graft to produce a queen. In about forty hours (not more than that) he removes that larva and replaces it with a new one of the proper age to produce a good queen; but before placing the second graft in the cell cup he takes a small square-end stick and works the royal jelly down until the surface is level, so that the small larva will not be enveloped by the royal jelly from where the largest graft was removed. He also trims the cell cup to about the length it was at the beginning. The result is that the cell is not capped over until the larva reaches the proper age, and by that time there is such an abundance of royal jelly that the young queen has all she can consume, and more. Mr. Perkins claims, I think, that many of our queens are not properly nurtured, for the reason that royal jelly becomes so hard (owing to the small quantity in the cell) that the young queen can not absorb it, hence she comes out half starved, and is only a runt; whereas the queen from the double graft leaves, when she hatches, a large lump of white royal jelly which would be almost fit to start another graft with.

Several bee-men here have tried Mr. Perkins' plan, and are well pleased with results. The principle is good, and I know Mr. Perkins to be one who thinks, and does not jump at conclusions; and any one who tries this method carefully will be well paid for his effort, and will develop a better class of queens than he ever had before. Some lose a small part of the second graft.

Imperial, Cal., Nov. 16.

[Our readers will not forget that Mr. George is one of the most extensive honey-producers in the West.—ED.]

THE ORIGIN OF HONEY-DEW.

Not an Excretion.

BY D. M. M'DONALD.

[Most authorities regard honey-dew as a *secretion* principally, instead of an *excretion.* Prof. H. A. Surface, p. 623, Oct. 15, says that some of the plant-lice are not provided with the cornicles, etc., through which the sweet substance is secreted, and that from such insects the honey-dew may be produced through the vent. We assume from this that Professor Surface believes that most of the honey-dew is secreted. However, no less an authority than D. M. McDonald, the noted Scotch writer and bee-keeper, denies that honey-dew is ever an excretion. Personally we hope that this is true, for it is exceedingly revolting to one's nature to think of eating a substance *excreted* by an insect; and we are inclined to believe that entirely too much prominence has been given to this phase of the question. And when doctors disagree, is there any reason why bee-keepers should ever refer to honey-dew as being an *excretion* from plant-lice?

Mr. McDonald's article on this question, in the *British Bee Journal* for Nov. 4, is so interesting, and shows so clearly the source of the inky color which is noted at times in honey-dew, that we give it herewith in full. —ED.]

This *bete noire* of bee-keepers has been very prevalent in this country, on the Continent, and in America during the past honey season, and many an enthusiastic bee-keeper has had reason to curse its presence, while others may have still further cause to rue its contaminating influence before next season opens. Assuredly, manifesting itself in quantity in any hive will not tend to suc-

cessful wintering. Not that all honey-dew is so very bad, for there are at least two kinds of it, differing considerably in composition. One is a saccharine juice which exudes under certain climatic conditions from the leaves of various trees, amongst them being oak, chestnut, lime, beech, ash, conifers, and fruit trees. Now, as is well known, there visits these "sweating" leaves an aphis which feeds greedily on this sweet substance. It, like the bee, has something in the nature of a honey-sac, quite separate from its ordinary stomach, and from which, when the sac gets overcharged, it regurgitates, or rejects, "aphidian honey" by means of two tubes used for *no other* purpose, fortunately for the bees and their keepers. In itself this fluid, which is a secretion, *not* an excretion, would not be wholly unpalatable. It looks like a bright, sparkling, clear drop of liquid when held up against the light, and tastes by no means harsh. But, unfortunately, a soot fungus grows on the leaves, making them appear as if they had been coated with this substance. To the sorrow of the bee-keeper and to his serious loss, this gives a black inky appearance to the saccharine matter when it is gathered and consigned to the cells, and when extracted it looks dark and muddy, sometimes resembling in color blacking or coal tar. Much of it in the admixture thoroughly injures the sale of the honey, and even a little of it goes far to deteriorate the quality and flavor.

The following method may be used to test the amount of real honey and the proportion of honey-dew: Place a large spoonful of slaked lime in about two pints of water, and stir the compound thoroughly. Allow the lime to settle at the bottom, and then pour off the clear liquid into another bottle. Place a teaspoonful of the inky honey into a tumbler nearly full of this lime-water, and give it a good shaking or stir it smartly. It the mixture remains clear you have pure honey; if partly cloudy you have a small mixture of honey-dew; but if it turns very muddy it is largely contaminated.

The eye at once detects its presence, however, as the honey assumes a muddy, cloudy, dark appearance unknown in flower nectar. The sense of taste aids the eye, and to the initiated not only clearly proves that it is present, but pretty well gauges its proportion. Aiding these two senses comes that of smell. The odor of honey-dew is something apart from that of any true nectar secreted by Flora's offspring.

The very worst type should be sold to the blacking manufacturers, or it might be used as a lubricant. Large quantities of inferior honey are annually purchased by biscuit manufacturers, and honey-dew can, if not too strongly flavored, be substituted if sold as such. For those who have a trade in low-grade honey a blend of honey and honey-dew will sell easily under a suitable name at a low price. Foreigners and a certain class in great parts of our larger cities would not object to the pronounced flavor if they got it cheap. A blend, if honey-dew is not in the ascendant, might be allowed to granulate, and can then be sold cheaply in this form as honey-dew honey. If there is only a slight coloring many would purchase at a small figure if the home market is worked up. Those having a large quantity much contaminated should preserve it carefully till spring, and feed with a view to stimulating. For turning into bees it is as good as the very best and choicest grade on the market. Another use to which I wonder somebody has not advised it should be put is to draw out new combs. With a glut from honey-dew a large number of combs could be built in a few days. Honey-dew is a saccharine substance, but it contains a residue. This latter the bees would carefully eliminate in changing the liquid into a solid, so that the combs would be perfectly sweet and clean. It is possible, however, that they might be of a darker shade, or assume something of a green tinge. With a heavy flow on from this source, remove regular shallow-frame bodies, and replace them by full-depth frames fitted with full sheets of foundation, and they are drawn out as if by magic. It is not generally known, but it is a fact all the same, that far more perfect combs are constructed in surplus-chambers than can be obtained in the regular body-box, and with a heavy flow and a full force of bees they can be got flat as a board.

This has been an uncommonly bad season for honey-dew, and an undue proportion of the little genuine honey gathered has been spoilt by the admixture. Fortunately, the plague in its worst form is not of frequent occurrence. The year 1907 was bad, 1898 was worse, but these are the only really bad seasons, I think, for over twenty years. Dr. Miller records that he had only one vile year in forty-eight. Mr. Carr, in 1898, described that season as the only really bad one he had experienced in over twenty-five years, and for over twenty years I have never had its presence made offensively manifest. Ancient writers set a higher value on honey-dew than we do, and Pliny called it the spittle of the stars, while others called it a dew from heaven. I should like to impress on readers that, although it is frequently associated with the presence of aphides, cocci, etc., they are a result of it, and not it of them; and, further, I would desire to emphasize as a fact that the "aphidian" honey is not an excretion, but simply an exudation from the leaves, or an ejection from "honey-sacs" by peculiar organs of these insect pests, and that the black inky shade is due to the mold, or fungus, and not to the insect or the "dew."

THREATENED DAMAGE SUIT AVERTED.

Mr. Root:—I wish to thank you for the interest you have taken in my case with Mr. ——. You will remember that he claimed my bees injured his peaches, and threatened to bring suit for damages. I sent him your letter as well as some communications which I received from other sources, together with "Bees and Fruit" and other printed matter. I have not seen him nor heard from him since, and do not think he will carry the matter further.

Valparaiso, Ind., Oct. 9. E. S. MILLER.

CUT COMB HONEY.

A New Industry that has been Developed for the Dining-car Companies and the Big Restaurants in the Cities.

BY E. R. ROOT.

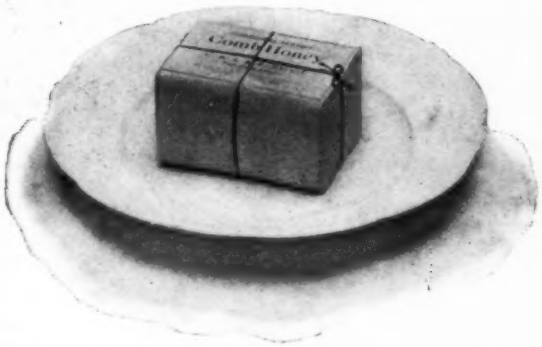
For a number of years back, there has been an ineffectual effort made to develop a honey trade with the railroads for their dining-cars and the big hotels and restaurants of our cities. Their objection to extracted has been the fear of adulteration. Comb honey was all right, but it did not pay them to cut up a whole section just to get one portion for an occasional customer who might ask for it. The mutilated comb left, it was explained, might lie around a dripping mess for some days before more would be called for. No, Mr. Restaurant Man did not care to bother with it, neither did the dining-car people.

About three years ago we conceived the idea of making up individual services of comb honey put up in neat paper cartons tied with a blue ribbon. We then put a man on the road to wait upon the big roads centering at Chicago, and the large restaurants.

The little services of comb honey looked neat and pretty, and the dining-car people gave it a trial.

Each service was made just large enough to contain a choice piece of extra-fine honey sufficient for one person; and whether one or a dozen calls came in, it made no difference, because there was no daubing or cutting into a large piece of honey. The traveler, when he calls for a service on a diner, is given a neat little package which the waiter opens up and places before him. The cut chunk of honey is perhaps less liable to arouse in his mind the silly idea of the so-called "manufactured comb honey" he sees in sections.* He is pleased, and so also were the dining-car people.

At first they bought in very small quantities, and later they increased the size of their orders until now large quantities of honey are sold to this special trade. In order to



Individual service of comb honey, designed especially for Pullman dining-cars and fancy restaurants.

give the reader an idea of how the railroads are taking hold of it, it would be proper right here to give a list of some of the prominent roads that are furnishing it on their dining-car service. The following is a partial list:

Chicago & Northwestern,	Baltimore & Ohio,
Santa Fe,	Big Four,
Erie,	Great Northern,
Lake Shore,	New York Central.
Missouri Pacific,	

If any reader of these pages should happen to be on a diner of one of these lines, let him ask for comb honey. When it is served we believe that he will agree with us that it is neat, attractive, and appetizing—fully in keeping with every other article served on these beautiful palace cars.

The large restaurants and hotels are just beginning to take it up; and if the industry continues to grow it will

Unwrapping the service and tearing off the extra flap.

* Some years ago one of our subscribers took some extra-fancy comb honey and offered it to some wealthy families. They were suspicious—thought it was "manufactured," and refused to buy. He was disgusted, and went home. He cut all those beautiful combs out of the sections and put them in wooden butter-dishes. These he took back and sold to those *same families*, and actually sold it for a higher price than he had formerly charged for the *same honey in sections*. This is, perhaps, an isolated case; but it shows how, sometimes, the public will take to cut combs when they will not buy regular section honey.

mean an enormously increased comb-honey trade of which the extracted-honey producer himself will not be slow to take advantage. In this connection it should be stated that honey for this individual service should be built on thin or extra-thin foundation in shallow frames. Full-depth Langstroth combs would require a too heavy foundation, resulting in a cut comb honey having a mid-rib altogether too thick.

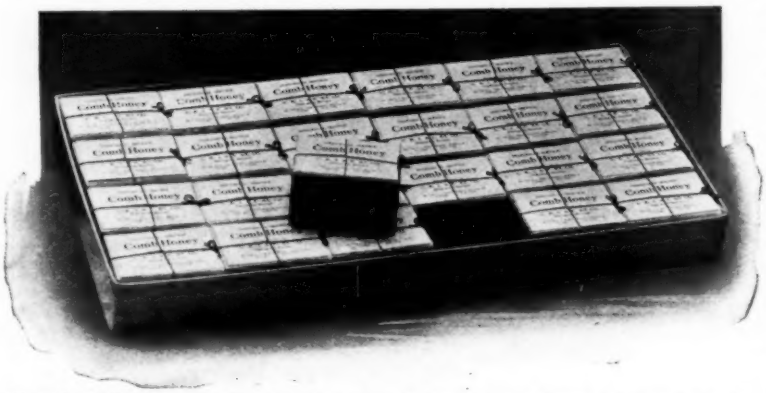
The possibilities in the way of producing comb honey with no more appliances than are required for shallow extracting-frames are almost unlimited. The actual saving to the bee-keepers of the country, and the increased demand for honey, are matters for the future to work out.

One can scarcely fail to see that, if the price of basswood timber continues to advance, the time may come when our comb-honey trade will work over into cut combs of about a pound weight, wrapped in transparent paraffine paper and enclosed in a neatly printed carton. It will be apparent, also, that honey put up in this form will ship much more safely than that rigidly fastened to little squares of wood, or, as we call them, sections.

Ready to place before the traveler.

"A dish fit for a king."

It will also be evident that much more comb honey can be produced in this way than in section honey-boxes. Do what we will, every honey-producer knows that he can produce more of extracted than of comb in the individual sections shut off between separators or fences. If the comb-honey business can be reduced down to simple extracting-frames and supers that can be used over and over without the messy job of extracting, what may we expect?



How the individual services of comb honey in boxes of two dozen are turned over to the dining car people, and the big hotels and restaurants.

The question may arise, why the comb-honey producers could not *now* convert their supers into extracting-supers, cut up their combs, wrap them in

paraffine paper, and slip them into cartons. Why, it would save all scraping, all expense of sections, and eliminate very largely the annoyance of unfinished sections, to say nothing of the hesitancy on the part of the bees in entering the sections in the first place, when the season is a little backward or off.

But let us look at the other side of the proposition. In the first place, the public would not take to cut combs, and drop honey in sections all at once. In the second place, the average honey-producer has not the appliances, neither has he the skill, to cut up comb honey and give it to the public. To do this without making a dauby mess of each package, and making it cost more than honey built in sections, is no easy task.

The temptation on the part of some, knowing the difficulty of proper inspection, would be to put unfinished combs, and combs of dark honey, into cartons. The commission man and the grocer would hardly have time to unwrap every individual package to determine the nature of its contents. They might buy one shipment of honey, and if it was a mixed lot their customers would come back with a kick, and the trade might be ruined. On the present basis the contents of any shipping-case of comb honey can easily be determined by lifting the cover, and this fact is in itself a strong barrier against mixing poor honey with the good.

If this cut comb-honey or individual-service trade is ever to be developed it must be done by those who will put up a first-class article, and who will see to it that the flavor is of the very best. It would never do to attempt to palm off on the railroads or the fancy hotel or restaurant trade a poor or badly graded lot of combs, for they would give up the whole business in disgust; and right here is *the* reason why we have kept it from the public, not because we thought bee-keepers or commission men were dishonest, but because, lacking the proper facilities and the necessary skill and knowledge of the business, they might spoil a fine business that was just in its infancy. Now that the trade is established, we have no fear that it will not hold its own.

The subjoined illustrations will give one an idea of the character of the individual service. First a neat little package of comb honey is laid upon a plate. It weighs approximately four ounces. The waiter unties the string, then unwraps the comb, that is clean and bright. It looks like a piece of chunk honey from one of the hives on the old farm, and it tastes like it. The wrapping is taken away when the honey is deposited upon a little plate, making a "dish fit for a king."

In the absence of any plate, for a picnic crowd the little unfolded carton makes a fine pasteboard plate; and right here it is easy to see how a confectioner could handle this individual service, because he could hand a package right out to the customer, or he could hand out a dozen of them. The time will come when grocers will buy these services in two dozen lots for the fancy trade, for it is put up in pasteboard boxes as shown in one of the larger illustrations. Some of his trade would buy a whole box of it, others would get a dozen or half a dozen.

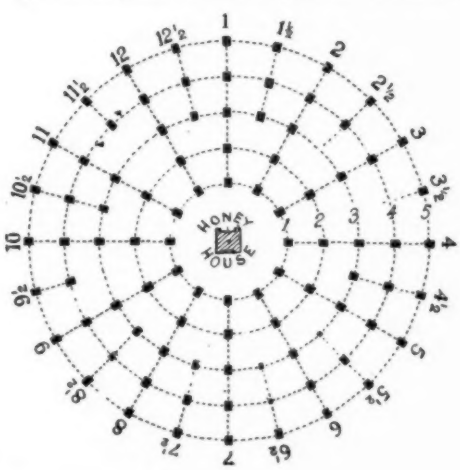
Where it is bought in single lots, as in Pullman cars, restaurants, or elsewhere, each service will usually retail for 25 cts.; in larger quantities there will be a corresponding reduction.

A UNIQUE ARRANGEMENT OF AN APIARY.

A System of Locating Colonies Around a Honey-house in Such a Way that there is a Straight Path from Every Hive to the House.

BY CAREY W. REES.

My plan of locating hives is such that a hand-cart may be wheeled straight from any hive to the honey-house. The rows of hives extend in every direction from the honey-house, the plan being like a huge wheel with the rows of hives for the spokes and the honey-house for the hub. The diagram shows the system that I follow for numbering the stands. Some object to the hives



being so far apart, for the reason that it takes too much time to go from one to another; but for convenience I like plenty of room. Of all unpleasant places to work it is an apiary where the hives are crowded together, or where they are under trees. If hives must be set under trees, the limbs should be trimmed high, so as to avoid catching the veil. Since I have no trees or bushes in my yard I use the ventilated covers and shade-boards over them. During the hottest weather I draw the hives back beyond the end of the bottom-board so as to give more air.

One fault of my plan for arranging an apiary is that a team can not be driven to the honey-house; but in my judgment this does

REES' APIARY IN WHICH THE HIVES ARE ARRANGED IN CIRCLES ABOUT THE HONEY-HOUSE.

not make much difference, for it is not safe to take horses too close to the bees, and the honey must be taken some distance in the hand-cart any way.

On the side of my honey-house, opposite each full-length row, is the number of the row or street as I call it. The row of hives is the street, and not the passageway between. The stand or space where the hive rests is the street number; and if the hive is moved it takes the number of its new place. The half-rows are numbered in fractions, as indicated. Then the circle of hives nearest the honey-house is called first, and the next one to it second, and so on. Each location, then, is known by two numbers, the first indicating the row and the second the circle, whether first, second, third, fourth, or fifth. When I refer to any special hive, calling it by the numbers, my helper can go straight to it.

Lytle, Texas.

[While the arrangement you use has some advantages, yet where land is limited it is not the most economical method. The hives near the outskirts of a yard are further apart than those near the center. Then, moreover, the arrangement has the disadvantage that it makes the hives so nearly alike as to location that the bees would be more or less confused as to their entrances. As nearly as we can gather from the illustration, the entrances are all pointing outward. We would suppose there would be less of confusion if some of the entrances pointed in the opposite direction, thus giving the bees a better chance to locate their particular hive.

The most economical plan, so far as room is concerned, is to place the hives in groups of two or three, or even five. When an apiary is arranged in the form of groups the apiarist can save a good many steps, for he can sit on one hive and work another. He may not have to take more than three or four steps to work five hives. If you were to figure out the actual mileage in walking from one hive to another and back until every hive is reached, on your plan, you would find it quite a distance.

As a general thing, we may say that a mathematical arrangement, one that looks nice on paper, does not work well in practice. The strong colonies will absorb from the weak, because young bees are quite apt to join with the strongest flying force in front of any particular hive, especially if they are a little confused as to their exact location. Each particular hive and group, if the group plan is used, should be given as much of an identity of its own as possible; for bees, like human beings in a big city, often get confused, and this confusion rather works to the disadvantage of the bee-keeper in that some colonies become abnormally strong while others become weak. A colony too strong will swarm; but one that is too weak, or that loses its force to its neighbor, will not do much in the sections or supers.—ED.]

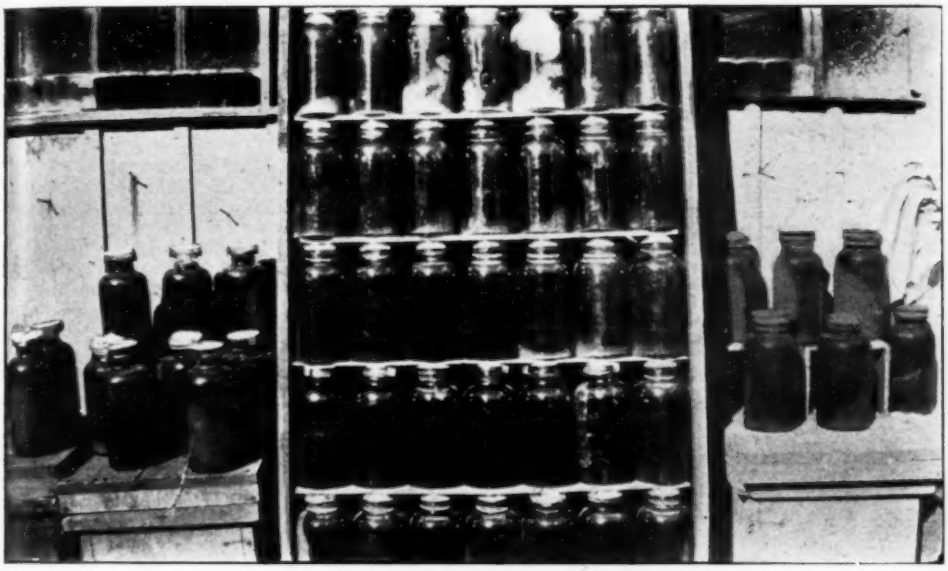
PREVENTING CANDYING OF HONEY.

How the Sun's Rays May be Utilized to Sterilize Honey and Prevent it from Crystallizing.

BY H. R. BOARDMAN.

[Noticing, some years ago, that honey in glass next to a window exposed to the sun's rays did not candy, while that in ordinary tin cans would become solid, we began to wonder whether the sun's rays did not have a chemical effect upon the honey, for the heat at that time was not very great, and could at no time have been higher than the natural temperature of the room—possibly 75. Some time after this, A. I. Root, in one of his letters from Florida, mentioned incidentally that his neighbor, E. B. Rood, had a method for preventing extracted honey from granulating that he thought was new and valuable, and then explained that it was done by putting bottled honey in solar wax-extractors. Of course we were immediately interested, and wrote to have Mr. Rood send us an article describing the method more in detail, and particularly to tell how long he had used it. Mr. Rood complied with this suggestion, as will be seen by our issue for Aug. 15, page 498. At this time we published a note from our stenographer, W. P. Root, who had also noticed that honey standing in a window did not granulate like some of the same kind in a tin can.

Our readers will remember that Mr. H. R. Boardman, a bee-keeper and a close student, some years ago sent us some samples of his extracted honey, which he said would not granulate. He desired us to give it a thorough test, and hoped we might try some of it in the family to see how we liked the flavor. One jar of it we took home; and it is needless to say it was as fine as any extracted clover we ever tasted. Our friend did not at the time explain how he treated this honey, but merely remarked that he thought he had a method that was reliable. We placed a couple of jars out on the window-sill, just opposite our editorial desk. This



BOARDMAN'S STERILIZER WITH THE GLASS REMOVED; THE SUPPLEMENTARY CANS ARE PLACED ON BENCHES OUTSIDE.

honey stood outdoors during the following winter, subject to extremes of temperature. If there is any thing that will make honey granulate it is alternate warming and cooling; and if ever samples of honey were subject to these changes, these were. As we now remember it, the honey remained liquid throughout that winter, and all of the following summer and fall; but about the middle of the following winter it began to show slight traces of granulation. We reported the results in GLEANINGS at the time.

Mr. W. A. Selser, of Philadelphia, who was then doing a large business in bottling honey (probably the largest in the United States), was very much interested. We learned afterward that he wrote Mr. Boardman, offering him five hundred dollars in cash if he would tell him the method; but at that time our friend was not ready to make it public, saying he had not yet tested it thoroughly, and wished for more time.

A few days after the publication of Mr. Rood's article on p. 496 we received a letter from Mr. Boardman saying that the plan was the same that he had been using for many years, and then added that, if we would like, he would send us an article describing the whole thing. You may imagine we did not wait for a second invitation. Well, here is the picture and the article, and they will speak for themselves.—ED.]

During the last ten years I have kept, perhaps, an average of one hundred colonies of bees, and have run them mostly for extracted honey. Nearly all of this I have put in glass packages, sterilized in my solar sterilizer, and furnished to the grocery trade or sold in my home market. So entirely satisfactory has this honey been found that I now have very little, if any, other. I am seriously contemplating cutting out comb-honey production entirely in the near future.

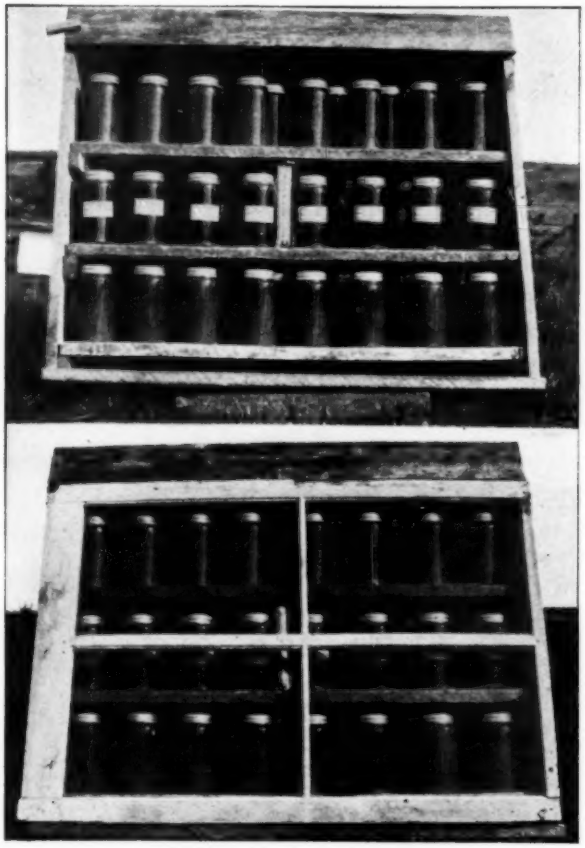
I started my experiments with the rays of the sun by placing granulated honey in a solar wax-extractor to restore it to the liquid state. So well pleased was I with the results that I continued the experiments further. In the mean time I discovered that there were some properties besides heat in the sun's rays which were being imparted to my honey that made it act differently from any honey that I had warmed artificially. These results led me to treat liquid honey, as soon as I extracted it, in the same way, and I found that it came out bright and sparkling, with the delicate original flavor unimpaired.

LAST YEAR'S CROP.

Some of my honey from last year I carried over. It was in two-quart jars, and all that was thoroughly treated to the sun I found remained bright and sparkling, and in perfect condition in every way. Some that had been treated hurriedly, on account of a lack of capacity of my sterilizer, crystallized more or less, but I was not disappointed in this. Honey that is often disturbed will soon show a tendency to granulate. Moisture will cause honey to granulate. Some of the jars in the top row in the engraving show this very clearly. A little water got into these jars after the honey was sterilized last year. This honey grained and settled down into the clear liquid, and remained suspended in fantastic shapes.

In 1902 I sent the editor some samples of honey put up in jelly glasses, and taken from a lot prepared for market the year previous. At that time, as it showed no signs of granulating, I supposed it would remain liquid indefinitely. This was put to a strenuous test during the winter, and it granulated as reported at the time. I am entirely satisfied, however, from further experiments, that this granulating was caused by frequent handling and disturbing. I have some of this same lot of samples yet that have remained undisturbed, and there is no granulation, even though seven years have elapsed.

In the light of these experiments I think it is conservative to say that honey thoroughly and properly sterilized will remain from



REVER'S SOLAR LIQUEFIER.
The upper view shows the glass front removed from the box.

year to year unchanged, and, under favorable conditions, will remain indefinitely without granulating. If, for any reason, the honey is not thoroughly treated, it may sooner or later show a tendency to crystallize.

In this connection I would say that I have found full sunshine absolutely essential to perfect sterilization. Unfortunately, this is a feature which we can not control. In the sunny South I know of no reason why a solar sterilizer of honey should not be eminently successful, and, to some extent, be utilized in putting up bulk comb honey.

BULK COMB HONEY.

With comb and extracted honey together, my experience has been quite limited; but for the benefit of our bee-keeping friends in the South, who put up and deal in this class of honey, I will report briefly some of my experiments. I used two-quart wide-mouth glass jars altogether. On several occasions I put choice comb honey in several of these jars and then filled them up with sterilized liquid honey. The honey which leaked from the comb invariably caused more or less patchy granulation, but the jars went through the winter without granulating solid. I would carry these experiments further if there were a demand in my locality for honey put up in this form. Comb honey, of course, can not be sterilized without melting the comb.

THE STERILIZER I USE.

My old solar wax-extractor I placed in an upright position, and it became after this a solar honey-sterilizer exclusively. I use almost entirely the two-quart jars, such as we use for the Boardman feeder, not because they are the best, but because I have a large supply of them on hand, and because I can use them economically, both for storage and for my own home market. Smaller packages give better results. When using the large jars my sterilizer has a capacity of about 200 lbs. This has sometimes proved to be too small, especially when the weather was unfavorable. I supplemented the work by placing some cans on the sunny side of a wall on benches to keep the honey from granulating until I could more thoroughly treat it in the sterilizer later.

AN IDEAL STERILIZER.

I have under consideration an improvement in my bee-house to make this sterilizing feature more permanent. The south end of the building will be made into a mammoth sterilizer, closed like a conservatory, and having an adjustable shutter from the inside. I will have two or more compartments independent of each other, and these will also be used as windows to light the room, which is to be used for storing honey as well as a work-room. In this room the extracted honey can be stored and treated in the sterilizer at will without going outside.

Collins, Ohio.

[It appears that the article by Mr. Rood called forth still another response, and that was by Mr. C. W. Rever; but apparently the latter did not associate with the method the chemical effect of the sun, for he states that it might work very well with the 60-lb. tin cans; but it would appear from the experiments of Mr. Boardman and Mr. Rood that the sun's rays do something else than really heat the honey. If old Sol can bleach some objects and darken others through what is known as the actinic rays; if he also has the power of destroying certain deadly germs and making other forms of life propagate, we may reasonably presume that he might have some effect apart from the heat that it may impart. We are glad to place before our readers the article by Mr. Rever. —ED.]

THE SUN'S RAYS TO PREVENT CANDYING.

BY C. W. REVER.

I am sending herewith some views of my fireless honey-heater, which, though it is but a crude affair, is very practicable when the sun shines. I put some honey in it that was pretty well candied, and found that it liquefied in fine shape. Of course, the plan won't work in cold weather.

This solar liquefier does the best work if there is a single row of cans next to the glass. If there were a double row on the shelves, the inside cans would be too much shaded by the outer ones. The box should be lined with tin, painted black to absorb as much heat as possible. Furthermore, it should be as nearly air-tight as it can be made, in order to retain the heat. For my purpose I used an ordinary window. The north end of the box should be the highest, in order to give the sun a chance to reach the glasses. I keep a thermometer in the box, so I can tell the temperature, and find that it runs up to 150 degrees Fahr.

I think that this plan would not work very well for the 60-lb. cans unless they were turned several times, for the great bulk of honey would not be heated through in the day's time.

I do not produce very much extracted honey, and so have not had a chance to test this solar liquefier to any great extent; but I think if it does the work on a small scale it can be made larger with just as good results. The upper view in the photograph shows the box without the glass, and the lower one with the glass. If one were building a honey-house the south side or end could be made open to the sun, and this would make a very handy liquefier.

Wildwood, Mich.

HONEY KEPT WARM FOR FOUR DAYS AND THEN SEALED WILL NOT CANDY.

BY W. MOORE.

On page 496 I noticed the statements by the editor, E. B. Rood, and "Stenog" in regard to honey not granulating that had been exposed to the sun. Some years ago, in the heat of summer, the combs in one of my hives broke down. I took out the combs and strained some of the honey into a can, sealing it up tight. I do not remember whether I heated the honey, but I think not—at least not any warmer than it had been in the comb. After sealing I placed it in a cool dark cellar, and as it did not granulate at the same time as did my other honey of the same kind (clover), I resolved to leave it as it was, to see how long it would remain liquid. Unfortunately for my experiment a neighbor fell sick when it had been sealed up twenty-one months; and, having no other honey, I opened this jar to get him some for medicine. In a few weeks after opening the sealer the honey was candying.

Did not the late Mr. Alley discover that honey taken after extracting, and kept at 110° for four days, would not candy afterward?

Little Current, Ont., Sept. 17.

[It is true, we believe, that a long-continued warmth at a comparatively low degree (about 110° F.) will keep honey from granulating longer than a honey heated to a much higher temperature for only a short time. It is also true that the impairment of flavor is less. Possibly the low-degree heat of a sun-heated honey is the reason it keeps liquid so long rather than for any chemical reason; but we think not.—ED.]

DISTANCE BEES FLY FOR NECTAR INFLUENCED BY MORE THAN ONE CONDITION.

BY L. R. DOCKERY.

First, I believe the season of the year has much to do with the flight of bees; and the season by which they are most influenced is that of early spring. For illustration I might compare insect life to plant life or to man. As we all know, spring-time is when plant life does its utmost, and puts on more growth than at any other season of the year; and so, as the growing season comes on, does all the world get busy planting the season's harvest. In like manner does the busy bee exert its greatest activity, and will fly further, stay longer, and get more than at other seasons, when there is more nectar to be found; but its ambition has been somewhat satisfied.

Second, they will go a greater distance to some floral fields than others, not because of a greater quantity of honey to be found there, but on account of the fragrance of some particular flower.

In 1899 I was keeping bees in Central Texas, and the first thing to bloom was a grove of wild plum-trees three miles away; and during the occasional warm days when the wind was not blowing, the bees would work upon those trees in great numbers. Later, sumac began to bloom, and the nearest trees were half a mile away, but only a few trees. At a distance of two miles there were two hundred acres of sumac; but very few bees ever worked on it, although the ones nearest the apiary attracted hundreds of them.

In 1907 I was keeping bees at Socorro, N. M., at which place alfalfa and sweet clover were my main dependence for surplus honey. A field containing 400 acres of alfalfa began within 50 yards of the apiary, and extended 1½ miles away to where an irrigation ditch was cut. The bees began on a Monday in June, and at the end of two days' time every thing was finished to the ditch mentioned. Beyond this ditch an alfalfa-field of 100 acres remained standing; but an observation of this field failed to show many bees working it. The second observation on the same day in a field of sweet clover two miles from the apiary in an opposite direction proved that the working force was busy

ONE OF THE OUT-APIARIES OWNED BY BARRON

there. It seems to me this instance proves that bees will fly further to collect honey better suited to their taste than to go a shorter distance where the honey is just as plentiful but not so much to their liking.

Goliad, Texas.

BEE-KEEPING IN THE PECOS VALLEY, NEW MEXICO.

BY HENRY C. BARRON.

At the age of twelve years I began keeping bees, using the old home-made box hives with two cross-bars through the sides each way to support the combs. I always bored two ⅝-inch holes in the top of the hive, over which I set one (but usually two) small boxes, thus furnishing the family with chunk honey. We called it fancy comb honey, and had no trouble in selling it, provided there was a surplus over what we intended to use at home. At this time I never used foundation, even to the extent of starters.

THE SOURCES OF HONEY.

I have been at Hagerman, in the Pecos Valley of New Mexico, for fifteen years, and like it very much. We have to depend on irrigation entirely. Alfalfa and apples are our principal crops, with some varieties of fruit and corn cereals on the side. This is a good bee country, although the ground is pretty well covered. The fruit-trees blossom from March 15 to April 20, and after this come the wild flowers. Some bee-keepers consider this flow sufficient for building up their colonies and making them strong. A few of the orchardists, in spraying with arsenites for the coddling-moth, do not wait until the blossoms fall; and as they use no carbolic acid to prevent bees visiting the buds, many are poisoned. On this account we have adopted the plan of feeding between March 1 and 15, using flour, cornmeal, wheat shorts, and sweetened water, this latter made, perhaps, of four parts water and one part of sugar or honey. This mixture helps to keep the bees at home, and at the same time fills the hive with brood and young bees. Strong hearty colonies are thus ready for the harvest of alfalfa, which begins May 20, and lasts until August 20, or 90 days.

BARRON, OF HAGERMAN, NEW MEXICO.

This flow is followed by wild flowers until frost.

Sweet clover is gradually gaining ground; and, although it is termed by many a noxious weed, it is finding favor, and in a few years there will be enough of it to increase greatly our honey-flow. We have never grown buckwheat, although we intend to give it a trial next year.

METHOD OF TAKING THE HONEY.

The bee-keepers here aim to have large yards, at least a mile apart, each yard having from 50 to 100 colonies. Some have small light honey-houses on wheels, which they move from yard to yard; but I build a permanent house at each yard and have it fully equipped with an uncapping-can, settling-tank, gasoline-stove, tables, Porter bee-escapes, and a Daisy wheelbarrow. We run almost entirely for extracted honey, but produce sufficient chunk and comb honey for the local market. Up to the present time I have been getting 9 cts. for extracted honey and 12½ for comb. The chunk honey sells between 9 and 12 cts.

We see that all extracting-frames are empty, and on May 15 have them ready for the alfalfa honey. If we have sufficient supers we let them all remain on the hives until August 20, or the close of the flow, when we take them off and extract before the fall wild flowers bloom. If we are short of supers we have to extract two or three times before this.

PORTER ESCAPES AND HOT KNIVES.

We put on the Porter bee-escapes in the afternoon, and the next morning commence to uncap, using thick bevel-edged knives, made very sharp and exceedingly hot, as we use several knives at a time and leave those not in use in hot water over a one-burner gasoline-stove. We use the knife on one side of the comb only, and then put it back in the hot water, and select one of the other hot ones for the other side. We uncap both up and down, and see no advantage in either one over the other; but by cutting both ways the hands are rested. As our honey is very thick and heavy, a cold knife would tear and break out new combs. Our extracted honey usually granulates in from thirty to sixty days, and then we liquefy it, for we sell none

of it in the granulated form. If our comb honey does not come up to the desired grades we make chunk honey of it; and if it granulates before we sell it we feed it back to the bees and then put the comb through the wax-extractor; or we sometimes put the whole thing through the extractors and then feed the liquid honey to the bees afterward.

WE RAISE OUR OWN QUEENS.

We raise our own queens, although we purchase extra good breeders as occasion demands. In the past, this has caused a good deal of extra work; for at the end of the season we have a lot of fine queens left, which we endeavor to winter in nuclei, and our winters are often so open that we are compelled to feed continually. In the future we do not intend to do this, as we expect to take up queen-rearing on a commercial basis, arranging the work accordingly, This season we endeavored to use two full-depth ten-frame bodies as a brood-chamber; but we never could get over fourteen Hoffman frames of brood at one time. We use eight and ten frame hives, each frame having two horizontal wires and two oblique, filled with a full sheet of foundation.

THIN OR THICK TOP-BARS.

We have used the ten-frame extracting-supers for a sectional hive, using about five supers for each colony. The thin top-bar of the frame always sags, and there is no good way of quickly fastening the foundation to it; so in the future we shall use the thick Hoffman top-bars. We also use Massie hives and find them very satisfactory.

We make our increase on the shaking-out plan. I shake or brush the bees from five full frames of brood, confine them for six hours, then take them to another yard and give them a queen, and the work is done.

Hagerman, N. M.

PERMANENT SHEDS FOR BEES.

Why it Pays in Dollars and Cents to Keep the Hives Sheltered in a Shed.

BY J. T. WILLIAMS.

For nearly fifty years I have kept bees to some extent. I have used "gums," boxes, kegs, and hives of nearly every pattern. I have tried keeping the hives in the open under shade-trees, under shade-boards, and in sheds of different kinds. The photograph shows my latest shed that I built after my extended experience. By having a good shelter from the winds, as well as from the rain and snow, I can get my colonies built up strong much earlier in the spring, so that I can have good work done in the supers as early as April 12 in this locality. The hives remain in the shed the year round.

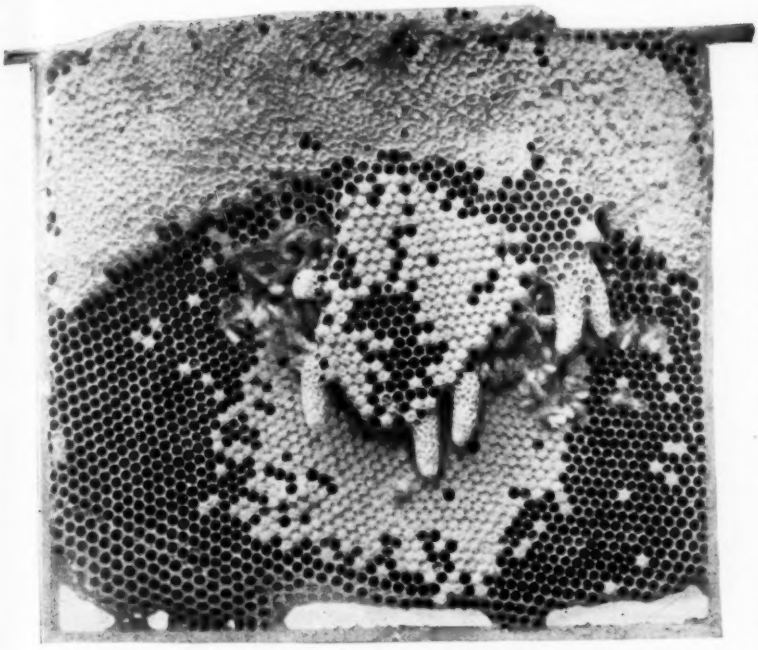
It will be noticed that the bees are clustered on the front of the hive considerably. The reason for this is that, at the time the photograph was taken (July 29), the bees were all in from the field, and some of the supers had been removed, for I had already taken off a part of the honey crop.

The front, roof, and back of the sheds are made of corrugated iron, the posts of cedar being set in the ground two feet. The front of the shed is 6 ft. 8 in. high, and the rear only 6 ft. The iron is well covered with red wagon-paint, while the hives are painted different shades of green.

The passageways of ten feet or so are for going in and out of the shed. I do all the work behind the hives, without a veil and often without even a hat. There is plenty of room in the shed behind the hives to run a loaded wheelbarrow.

As to whether it pays in dollars and cents to have hives under sheds, I will say that I think it pays just as well as it pays a farmer to build a barn to shelter his stock. Of

WILLIAMS' CORRUGATED-IRON BEE-SHEDS.



A FRAME FROM A COLONY THAT WAS PREPARING TO SWARM.
The combs had been spaced a little too far apart, and this gave the bees an excellent opportunity to build queen-cells.

course, the bees and cattle might live without the shelter, but they do much better with it.

ALFALFA IN UNIRRIGATED REGIONS.

In the A B C of Bee Culture the statement is made that alfalfa is not known to produce honey outside of the arid districts. I want to say that this is a mistake, for I have been raising alfalfa for ten years, and find it a great honey-producer as well as a hay-producer.

Noel, Missouri.

[Mr. Williams may be right in his estimate of the value of bee-sheds; but no less an authority than Mr. E. W. Alexander, and other bee-keepers of some prominence, have questioned whether or not the shutting-off of the sun's rays is not detrimental to the best interests of the colony in the early spring weather. These sheds would cut off the sun's heat at least half of the day. During the hottest weather this would be an advantage, perhaps; but in the spring it might be too much of a good thing. As we have before reported, we find that those colonies at our home yard that are shaded a good part of the forenoon do not make as good progress in brood-rearing in the spring as those out in the open, exposed more to the direct rays of the sun.

It would be our opinion that the chief value of the sheds here shown is not so much in the shutting-off of the sun and storm as in cutting off possible wintry blasts. In this connection we find that those of our colonies that are situated so as to be exposed to a clear wind-sweep, the draft coming through a gap in the evergreens, do not winter as well as those that are protected more from the prevailing winds. The sheds would cut off wintry blasts as well as the cold winds in early spring. This of itself is of some importance; but could not practically the same results be secured by a high board fence, without any roof? We simply raise the question. We do not know. Of course, this whole proposition will be modified by locality. In the warm countries sheds are almost indispensable, for direct tropical or semi-tropical sun rays are very severe upon the combs of a populous colony.

In the last edition of the A B C of Bee Culture, now on the press, the statement regarding alfalfa for the eastern sections of the country has been modified; but it is a fact that, outside of the irrigated regions, except in some particular localities, alfalfa does not yield any honey, or at least not very much.—ED.]

QUEEN-CELLS GALORE.

BY W. A. PRYAL.

Last spring, while manipulating among the bees I found a colony that was making great preparations for swarming. I think it contained more queen-cells in various stages of completion than I ever before saw in a colony. Between two frames that were spaced a trifle further apart than they should have been the bees had filled in the unnecessary space with thin sheets of

A small piece of comb containing an unusual number of queen-cells.

comb in the manner shown in the accompanying photographs The smaller bit of waxwork I broke from the frame. It is unusually interesting, inasmuch as it exhibits in a very small space the three styles of cells to be found in a normal colony of bees. Note the dozen or so queen-cells, and there are others on the reverse side.

The larger photo is interesting, too, in many ways. It will be noticed that the queen was "not up to her speed," else she would have been more careful in her egg-laying—there would not have been so many skipped cells. The honey-storage was ample and good.

Oakland, Cal.

A SEASON'S AFTER-THOUGHTS ON FEEDERS, FEEDING, AND COVERS.

BY F. DUNDAS TODD.

Since coming west I realize more and more each day how very much must be included in the word "locality," the bee-keepers' technical term for environment; for as I read the pages of this magazine word by word and line by line at least twice I often find myself saying, "That is all right for Illinois, but not for this neck of the woods." Conditions are so different, and I am yet far from understanding them, especially when on every hand I am assured that this has been a most exceptional year, the temperature and seasonal arrangements having been turned topsy-turvy. This is a great pollen country, especially when, in May, the Scotch broom blazes forth in gorgeous golden yellow, a positive eye-feast of splendor; and yet under the date of April 3 my notebook reports, "Been a dearth of pollen up to now." The first pollen of the season was carried in on Feb. 22. The trouble was not with the flowers but with the daily temperature, which rarely got up to 48°, so that the bees could not fly. We had a cold wave the first half of January, when almost zero was reached; but by the 20th the bees had a flight From that date until March 17 the thermometer hung around 40 to 48 degrees with deadly uniformity, once in a while reaching 50 for a couple of hours—sufficient for a flight, but not long enough for much work to be done.

It was during this distressing period that I began to get a new light on the problem of feeders. My bees were in desperate need of stores. This is matter for another story, possibly with a moral new to many that may be told later, and so I got out the bottom-board feeding-tins, and put them into operation.

My readers may remember I selected this style because I thought they would be equally suitable for spring stimulative and fall solid feeding. For the latter purpose they are all right, though not nearly as good as the Miller feeder (I have used both), and I have just finished feeding 300 pounds of sugar to make certain the bees will not be dependent on honey-dew alone in winter—the only crop they secured being composed of that wretched stuff.

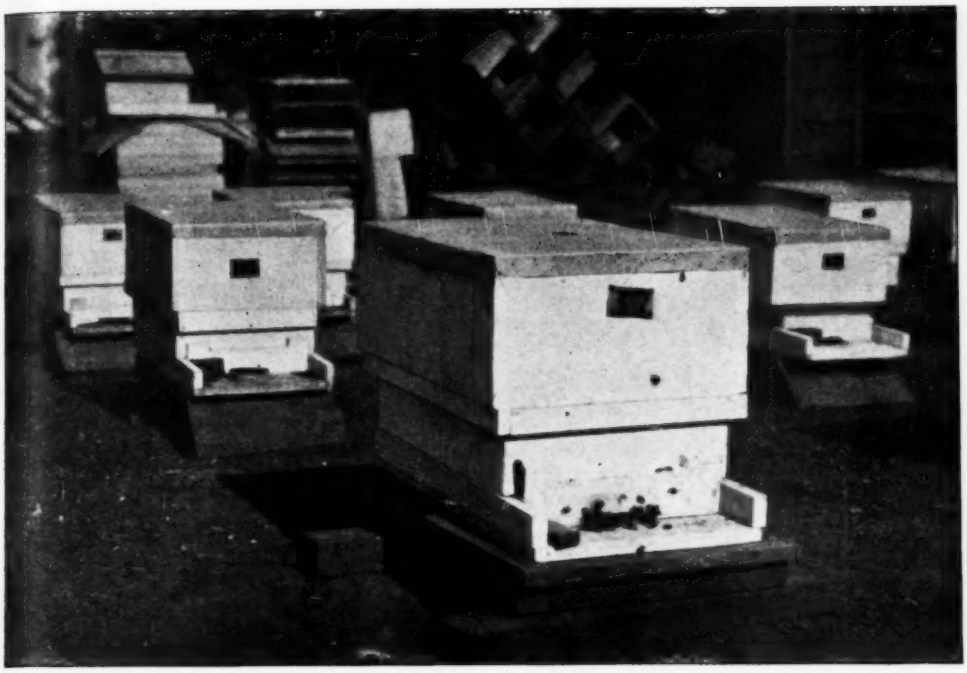
As a spring feeder in this locality the bottom feeder is a failure, for (and here is a fact I have not yet found in bee literature) bees will not take up thin syrup from below when the temperature is under 50°. For back feeding, as Mr. Hand uses this feeder, I believe there is nothing handier, because in August, a year ago, I fed slowly to a number of hives in an effort to get combs, and learned its convenience. But my season's experience convinces me that in a climate of steady low temperatures, like this and that of the British Isles, the best spring feeder is one that slips into the brood-chamber like an ordinary frame, the Doolittle being the type.

THE DENSITY OF HONEY; DIFFERENT SYRUP FORMULAS; MEASURE OR WEIGHT OF SUGAR AND WATER.

While discussing feeder problems I am naturally led to that of the syrup, especially that given for winter stores. It has been shown that the greatest economy is exercised by giving a syrup as nearly the consistency of honey as possible. Nowhere can I find an authoritative statement as to the density of honey excepting in the United States Pharmacopeia, where it is given as 1.37. Honey by bee-keepers is generally assumed to be half as heavy again as water — that is, possessing a density of 1.5. But Mr. I. Hopkins, government apiarist of New Zealand, is quoted as advising that no honey be marketed unless it has a specific gravity of 1.4; and he thinks 1.4 even better, as all samples he had tested of that specific gravity, *and upward*, were perfectly ripe. In making the feeding syrup we may, therefore, take 1.4 as a safe standard, and so prepare a solution that will be of slightly less density, say 1.2.

Mr. E. D. Townsend recommends a syrup composed of three parts of sugar and two of water, which, he says, weighs 11 pounds to the gallon—that is, has a density of 1.37; and I note with pleasure he says he weighs both the sugar and the water. Several writers recommend so many parts sugar, so many parts water, *by weight or measure*, the assumption being that sugar and water, bulk for bulk, are of the same weight, which, as a matter of fact, they are not. An ounce of water, fluid measure, weighs an ounce, exactly, in Britain, and approximately so in the United States, so that the United States pint of 16 ounces weighs practically a pound. But a pint of sugar, such as I have been using, weighs about 13¼ ounces; therefore a formula that recommends quantities "by weight or measure" is a very unsafe one to follow. Mr. Doolittle's recipe consists of boiling water, 15 lbs., or 15 pints; granulated sugar, 30 lbs., or 35 pints; extracted honey, 5 lbs., or 3.5 pints.

I would estimate the total bulk of the above to be about 38½ pints, so that the density of the feeding syrup is probably about 1 3.



TODD'S TWO-STORY DIVISIBLE HIVE WITH TELESCOPE COVER.

The bottom-board has a 1¼-inch rim; the winter side of entrance block is turned down. In very cold weather the entrance may be further contracted by means of the block lying at the left of the alighting-board.

Another writer in the same issue of GLEANINGS, Mr. F. P. Clare, gives this formula:

Boiling water, 10 quarts, or 20 lbs.; granulated sugar, 30 quarts, or 51.5 lbs.; extracted honey, 10 quarts, or 28 lbs.

To me this looks like a total quantity of 36 quarts with a probable density of 1.39, being about 7 per cent thicker than is recommended by Mr. Doolittle, and even a trifle denser than the official quotation for honey in the United States Pharmacopeia. Let it be noted I can only estimate the bulks as the result of my experience in compounding the formula given in a succeeding paragraph.

Not having any honey of my own production on hand, and being afraid to use that from other sources, I practically followed Mr. Townsend.

There is considerable convenience in measuring out large quantities of sugar rather than weighing it, and so I use one of the ordinary tin quart household measures that are so common in American homes. I have the use of a rather large galvanized-iron pail whose full capacity is 20 quarts; but it is wisdom to handle only 16 in it. Assuming that a quart of sugar weighs 1¾ lbs., the formula for a thick feeding syrup works out as follows: Boiling water, 8 quarts, or 16 lbs.; granulated sugar, 14 quarts, or 24.5 lbs., making 16 quarts of syrup weighing 40½ lbs., with a density of 1.26.

When evaporated by the bees, each pound of this syrup will weigh 14½ ounces, less the amount used up in energy by storing and evaporating, probably amounting to the odd half-ounce; consequently for every quart of this thick feed given the bees, there will be in the hive 2¼ lbs. of stores.

COVERS.

Following out the idea hinted at in the article on covers, I have, this past summer, used only the telescope variety, and like it first rate—so much so that I have discarded the shallow one altogether. The galvanized-iron roof is excellent for this climate of wet and dry seasons; but I find it a necessity to have a wooden roof below it, so now I make what is really an all-wood telescope cover, and then put on the iron roof.

I also find I must increase the depth of the sides from 7¾ to at least 8 inches, so as to have a clear space of at least 1⅛ inches above the upper division, to give ample room for quilt and super-cover, also to take care of the honey-board when such is used. For quite a while I was bothered as to whether the "lug" of the end strip should overlap or be tucked under the side piece; but the first heavy rain quickly settled the problem in favor of the latter, as the former leaked freely.

I am sending a photograph to show how one of my hives looks when complete. They are all ready for winter. Notice that the rear has been raised about an inch so that the rainfall will run off the alighting-board. In the dry summer months they are perfectly level in both directions.

Victoria, B. C., Canada.

[In the matter of making syrup for feeding, mathematical precision is not at all necessary. As a general proposition we may say that, for stimulative purposes, a syrup of approximately one-half sugar and one-half water is about right. For feeding outdoors a thinner syrup still is better. For fall feeding, to give colonies the necessary stores for winter, two parts of sugar to one of water is about right. For late fall feeding, two and one-half of sugar to one of water is nearer the correct proportion. For feeding in September, in this climate, a two-to-one syrup is better, because the bees then have an opportunity to evaporate it slightly, and that means that they can treat it in their little chemical laboratories; that is, they "invert" it, as the chemist would say. This inversion, if carried far enough, prevents granulation. If, however, the weather is too cool for the bees to evaporate and cap over their stores there will be no inversion, and hence the need of a little honey or acid. Syrup would be a little too thin if made two parts sugar and one of water. For very late feeding, the bees can not do very much about evaporating, and we therefore recommend at such times a two-and-one-half-to-one syrup.

This question of proportion will necessarily be modified very materially by locality. One can hardly go by the calendar months for fall or winter feeding. He will, therefore, have to exercise a little judgment, taking into account the average conditions of weather at the time the feeding is practiced.

Our correspondent calls in question the statement when we say make the proportions "by measure or weight." He very properly assumes that this means the relative amounts will be approximately the same in either case. He finds that sugar weighs about 13½ ounces to the pound, and assumes that water will run about 16. We have been doing a little experimenting on our own account, and we find that the sugar that we use runs from 14½ to 15 ounces to the pound. The 15-ounce figure was obtained after filling an 8-ounce graduate with the gradations molded in the glass. Half a pint of sugar in this graduate, on some delicate scales capable of recording $\frac{1}{16}$ of an ounce, weighed 7½ ounces, which would make 15 ounces to the pint. We then secured a half-gallon measure and weighed that full of sugar on larger scales. The results upon calculation showed slightly over 14½ ounces to the pint. According, then, to our own figures, there is a minimum of an ounce or a maximum of 1½ ounces between the weight of a pint of sugar and one of water; but if our correspondent will dip up a dipperful of sugar and then a dipperful of water he will find that the sugar will be somewhat crowning in the dipper or measure unless he takes a great deal of pains to level it off with a straight-edge, which he would not do. A dipperful of water, owing to spilling and the uneven balance of the dipper while handling, will not be quite level full. So, then, when we proportion sugar and water by measure we shall have almost exactly the same results as if we had weighed it out on scales, or so near it that the difference would be negligible.

As Mr. Todd said, it is more convenient to use measure than weight, and we still think, therefore, that our statement in our A B C of Bee Culture, and in other literature, to make the proportions either "by measure or weight," is, to all intents and purposes, correct; but in any event there is no apparent gain in drawing the proportions too close.—ED.]

CANADIAN LAW ON SPRAYING.

Another Objection to the Capping-melter.

BY J. L. BYER.

What B. W. Harrington has to say on page 611, relative to the law in Canada compelling people who spray trees while in bloom to use crude carbolic acid in the spraying mixtures is new to me, and I feel quite sure that he is mistaken. So far as I know, Ontario is the only province in the Dominion that has a law against spraying, and that law allows no such compromise as Mr. Harrington states—at least I have never heard of it, and if mistaken I will gladly be corrected. The prohibitive clause in the act reads as follows: "No person, in spraying or sprinkling fruit-trees during the period within which such trees are in full bloom, shall use or cause to be used any mixture containing Paris green or any other poisonous substance injurious to bees." Then follow the penalties for infractions of the law. The Ontario government each spring sends out circulars to the bee-keepers and others; and in addition to a copy of the act being printed in these circulars, some instructions about spraying are usually included as well. Last spring the following information was appended: "The best fruit-growers consider spraying during the period of full bloom as a useless waste of material, and harmful to the setting of the fruit. It is universally condemned by entomologists in every part of America. The recommended formulas as sent out by both the Federal and Provincial Departments of Agriculture distinctly advise spraying apple orchards with Bordeaux and arsenites: (1) Just as leaf-buds are expanding; (2) *Just before blossoms open;* (3) *Just after blossoms fall;* (4) Every ten days later if required.

So far as I know, the law is pretty well observed, and a policy of education is mainly responsible for this being the fact. If a man thinks he is being injured by having to obey a law, he is very apt to break said law if he thinks there is no danger of being detected. Just as soon as the same man comes to think that the observance of said law does him no injury, but, on the contrary, does good—well, that's a different proposition altogether. Of course, there are a few isolated cases each year where some one will persist in breaking the law through ignorance or other causes; yet, as we have said, speaking in a general sense, the bee-men of Ontario have

J. L. BYER AND FAMILY.

[Mr. Byer did not know that we expected to use this engraving in connection with his article. He is too modest to push himself forward. But we are glad of an opportunity to introduce him more formally to our readers. We commend him as being a sound adviser, and an honest and fearless writer.—ED.]

little to complain of now in this matter of bees being poisoned by illegal spraying of trees. Not many years ago it was a live issue, and each year the Ontario Association held its convention many complaints would be heard.

Mr. Harrington also mentions the capping-melter, and this leads me to remark that we used it again while extracting the buckwheat honey; and, while we have always thought it was impossible to destroy the *flavor* of this honey, yet that which was allowed to cool over night in the small tank into which the honey and wax ran, had in the morning a decidedly "cooked" taste. It really seemed to be far more affected by the heat than was the clover honey. Since writing my experience with the capping-melter for a former issue of GLEANINGS another objection has appeared that has cooled off our enthusiasm quite a bit; for, honestly, if the "wish had been father to the thought" we should be very loath to say any thing against the invention, as we had hoped great things for it.

This being the case, what I say will not be taken, I trust, as carping criticism, but simply an honest expression of the merits of the machine pro and con as they appealed to us the past summer.

While extracting the clover honey at home, a large tank holding 900 pounds was filled with honey, all from capped combs, the intention being to have this for the home trade —all to be put up in five-pound tins. Two other tanks, of 600 lbs. each, were reserved for the same purpose. In the two latter tanks none of the honey from the capping-melter was put in, while in the large tank the bulk of this warm honey was mixed with the other. Now, it happened that we ran short of tins, and it became necessary to put up this honey in pails at once. The pails were accordingly filled, two or possibly three days after the tanks were filled. The honey from the two tanks was in another room, and was sold first, every thing being all right. A few days ago I went into the room where the 180 pails filled from the large tank were stored, and on looking into the pails my first thought was that some one had been in the room and had removed the covers of the pails for a time, as the honey was all covered with fine specks. A closer investigation revealed the fact that *every* pail of the 180 was covered with this stuff, whatever it was. As near as I can guess, the honey had not stood long enough in the tank before being filled into the pails, and these fine particles were minute bits of pollen and other matter that had been melted and mixed through the honey. Now, the honey from the other tanks that had no honey from the melter was filled up under the same conditions into pails, and yet it was as white as snow when in the granulated state. It was necessary for us to go over every one of those 180 pails, and with a spoon take off the top, and then fill up again with honey warmed up for the pur-

pose. As the honey was very thick and waxy, just starting to granulate, one can imagine what a time we had. Certainly the experience was not calculated to make us very eager for another one like it. The honey was all strained through very fine cheesecloth; but the warm stuff would go through with a rush, and doubtless carry through particles that would otherwise be caught if the honey were cold. A lot of our honey was sold for bottling purposes this year, and after this bit of experience we were congratulating ourselves that the honey sold to this party had been extracted at the yard where, for lack of room, the melter was not used. Mr. Fowls, and others who have used the melter, bottle extensively, and it would be interesting to learn from them if a more extended experience with this machine has in any way modified their previous views of it.

A TWO-TO-ONE SUGAR FOR FEEDING JUST RIGHT.

I am glad to note in the Oct. 1st GLEANINGS that Dr. Miller has abandoned the wasteful method of feeding thin syrup to bees in the fall. All things considered, I believe that the two-to-one mixture is the safest and best of all, as then it is so easily prepared. Simply dump a 100-pound sack of sugar into a tank; heat 50 pounds of water to a boil, and pour on the sugar. Stir vigorously with a long stick for a few minutes, and you have 150 pounds of bee-feed so good that I don't believe that acid, honey, or any thing else will improve it one iota. I am not saying that honey will necessarily hurt it, but then there is a great big chance that it may, in most "localities." Just at present I'll wager that Dr. Miller is not mixing honey with the feed. All this talk about the two-to-one mixture granulating is, in my estimation, just "talk." Last fall, about the middle of September, I happened to notice a dead queen in front of a strong colony. A queen was taken from a strong nucleus that we had intended to winter over, bees and all being united with the strong colony that had lost the queen. In making the change, two of the combs from the nucleus were not needed, and they were set aside in the honey-house and entirely forgotten for the time. These combs were filled with sugar syrup made as described, and the lower half of the combs were not even sealed over. Well, in the spring these combs were in perfect condition with not a sign of granulation, and this after having been exposed to all extremes and changes of temperature for seven months. Druggists use the two-to-one mixture altogether. I am informed by Mr. Deadman that a thinner mixture would ferment, while, if made thicker, rock candy would be the result in time. We personally know good bee-keepers who have fed many thousands of pounds of syrup of the two-to-one proportions, and never yet once had trouble with granulation. Surely with all this evidence I may be pardoned for thinking that there is nothing whatever in this granulation theory. In conclusion, let me say that there has been a great big change during the past few years on this matter of thick or thin syrup; and, if I am not greatly mistaken, there will be very little feeding of thin syrup in the autumns yet to come; and, more than that, I believe it will be considered very risky to mix honey with the syrup, and entirely unnecessary to add acids or other ingredients for the purpose of avoiding granulation.

Mount Joy, Canada.

[We quite agree with you that a two-to-one syrup will not granulate, even if nothing in the way of acid or honey be put in it. See our answer to F. Dundas Todd, on page 778 in this issue.

On the subject of honey discoloring in capping-melters, there seems to be a difference of opinion among those who have tried them. For instance, the Hutchinson Bros., as reported in the last *Review*, and Chalon Fowls, who does a large business in bottling, appear to think there is no impairment. May we have reports from others who have tried them?—ED.]

DO BEES STEAL EGGS?

Laying Workers Responsible.

BY SAMUEL SIMMINS.

In GLEANINGS for Aug. 1, p. 477, a correspondent asks how eggs in queen-cell cups are to be accounted for, when it is certain there has been no queen in the hive. The editor replied, "Bees in a few cases that seem well authenticated have been known to steal an egg or two from another hive."

Now, to be well authenticated a case of this kind must be left until a queen may be matured and hatched from those stolen (?) eggs. But this is just the result I have not yet found proved to be the ultimate act. Various writers have stated they have found eggs in queen-cups where there has been no queen in the hive, and they could explain the (to them) mysterious occurrence only by declaring the bees must have stolen the eggs from another colony.

Most bee-keepers are well aware of the usual way the laying workers have of apparently depositing any number of eggs in each of many cells. This does not prove that any one worker deposits more than one egg in a cell; for where a colony encourages them at all, there may be quite a number going around and adding their quota until there may be a dozen or more eggs in a cell. I have myself removed as many as three of these worker pests at one examination, while the late Mr. Frank Cheshire was looking on, and upon dissection he found the usual condition of developed ovaries. These were South African bees.

If no more than one or quite a limited number take to this unpleasant occupation, the eggs may be deposited more regularly, often not more than one to each cell, so that it is difficult for the owner to believe he has not a queen in the hive after all.

It may be taken for a fact, that, where

bees are without a queen, and more especially if there are few or no drones in the hive, any mature worker may take it upon herself to lay eggs; though, as I have sometimes found, she will deposit in the cell cups the bees have started, it may be a dozen or more, and in no other cells whatever.

I have been so satisfied in my own mind that workers have neither the will nor the power to steal, and thence transpose eggs to cells in their own hive, that I have always discredited such reports, more especially as quite a number of cell cups, each supplied with an egg, may be found in a hive; and until I have positive proof that such have been known to develop as queens, I can see no other possible explanation than that laying workers are responsible.

THE LAYING-WORKER NUISANCE; HOW ABATED.

The queen-rearer is, perhaps, more troubled with this plague than the honey-producer. I have, however, had workers laying in the presence of a young unfertile queen, and less frequently, also, while a fertile queen was in the hive. Queenless colonies that harbor laying workers have a great objection to the introduction of a queen offered by any caging process, as doubtless many have found. I have frequently overcome this trouble by my fasting plan of introduction; but perhaps the most effectual way of disposing of these plagues, and one that saves one's combs from disfigurement, is that of removing all the combs as soon as the trouble is found. The bees are then given starters (guides) only in a fresh set of frames, and at the same time a queen by the above method, when the result is usually satisfactory. If a virgin is inserted, then it is possible the workers' eggs may again appear in the new combs; but if these are cut out after a few days there will be some nice wax, and the laying workers will be found pretty well played out, as I can say I have never found them continue very long after this plan of shaking the bees back on to starters.

HIVES FULL OF NORMAL DRONES — NO LAYING WORKERS.

Year after year I have held queenless stocks all through the autumn with large numbers of normal drones, and so far I have not found any of the workers start laying in such drone colonies, though these have been absolutely without a queen for three to four months. This is a most fortunate fact in my own experience, because, should workers start laying, any drastic measures that might have to be taken for the exclusion of diminutive drones would be disastrous to these drone colonies that are then of so much importance.

In the earlier season I have had workers start their unpleasant business where there have been a few normal drones, and, of course, it is possible I may yet experience such a trouble with my large drone colonies; but as the latter are set up in July or August with a great quantity of young drones and drone brood, there probably is no inducement for workers to start laying.

Queenland, Heathfield, Sussex, Eng.

[We regard our correspondent as an unusually close and careful observer. In the case of bees stealing and transferring eggs, he may be right; and yet if we are not very much mistaken we had a couple of reports where perfect queen-bees actually hatched from eggs mysteriously appearing in each of two cells in two different colonies that had been hopelessly queenless for over a month. If these same parties are still reading GLEANINGS perhaps they will give further particulars. Or if there are any others who have definite facts based on actual observation we should be pleased to hear from them also.

We admit that it is probably true that the mysterious appearance of an egg in a hive hopelessly queenless is, in most cases, due to laying workers; but there are other cases that can not be explained on any other supposition than that the egg was actually stolen from some other hive. For example, the rearing of an Italian queen in a colony of blacks known to be long queenless could be explained on no other ground. If we are not mistaken a case of this was likewise reported.—ED.]

SHAKING AS A STIMULUS.

How Shaking Out on New Foundation Increases the Surplus over Previous Years Under Discouraging Circumstances.

BY W. G. WRIGHT.

There would, perhaps, be nothing remarkable in the following report under the Dr. Miller or Doolittle system; but under my system, which, other than to furnish the bees modern hives and room (when not neglected) might be called the "let-alone" system. I have kept bees for the past eight years. My time being occupied with other matters, I have given the bees but scant attention—no "coaching" of queens, etc. I let them swarm of their own accord. During the swarming season I usually look around the bushes once or twice during the day for swarms, but spend no time watching for them to come off.

With the exception of shaking out and being a little more liberal with section foundation the care this year has been about the same as usual.

Last winter (or, rather, late the previous fall) I found I had foul brood in my apiary. By March some were dead, and all seemed more or less affected, although some seemed strong in bees. As we had failed to get a foul-brood inspector for our county, and as near neighbors on either side had left their hives exposed, just as their bees had died from the disease, it was a question with me whether to spend any money in trying to save my own or let them go to the "boneyard" as others had done. In May they began

to cast some nice swarms. I then began to think of trying to save them. But as the apple bloom and other flora were about three weeks late, and I yet did not feel like spending money for feeding, and, like some others, I am prone to postpone undertaking a nasty job, not until about June 15 did I begin transferring them to new foundation. In the mean time the bees kept busy robbing one another, and the whole yard smelled something like a glue-factory, on account of robbing. I worked nights, doing a few each evening; but, being new to me, it was slow work, and I did not finish until June 26. Then I found I had left from the old stock of 28 stands 9 fairly strong ones and 6 nuclei, some without queens. To these I merely gave fresh eggs, letting them work out their own salvation, and it has taken them all summer to do so, as, with one exception, it made a few pounds of surplus. I also had 13 new colonies. Heretofore my average surplus has been from 40 to 45 pounds, spring count, counting unfinished sections and all.

This year I had 1279 sections, nearly all white, that would grade fancy and No. 1; also 100 pounds (by weight) of partly capped sections which sell as chunk honey—a total of 1379 pounds. If I am allowed to call the nine strong stands as spring count, it gives me an average of 153 lbs.; or, counting the whole fifteen, it still gives double the yield over previous years. I also had about 100 sections drawn out with more or less honey in. These I let the bees clean out for next year's baits.

Taking away all their honey, comb, and brood just at the beginning of the honey-flow the result was a surprise to me, and so satisfactory that hereafter I shall not hesitate to shake out a loafing colony at almost any time. And I might add that the above surplus might have been greater; but under my system (the let-alone) I did not notice that two of the new colonies were crowded, and about Aug. 1 each cast a large swarm. The first circled around a few times, and went off with a rush without settling, proving, I think, that they do have their location selected in advance. The other I put in a new hive on the old stand, old hive on top, with queen-cells cut out; then in a few days I put all back in the old hive, and in about ten days they were missing. Of course no more surplus from them was obtained. Although not making a thorough inspection before cold weather began, I have not detected a return of foul brood. This is surprise No. 2.

In treating the disease, having no furnace I dug a deep trench, made a grating of iron bars, piled the frames of diseased brood on this, sprinkled with coal oil, and set on fire. All that did not burn fell through. I then filled up the trench, and charred the inside of my hives and supers with loose paper and coal oil.

In driving the bees into the new hives they were stubborn, and inclined to bunch under the board or hive, and creep off into dark corners, until I tried running them up on the bottom-board of the old hive, making it connect closely with the entrance of the new hive. This I found worked nicely. They stuck to it as though fenced in.

Canon City, Colo.

BEE-DISEASE LAWS.

Their Enforcement.

BY DR. E. F. PHILLIPS.

In controlling bee diseases in a community, past experience has shown that it is necessary that every bee-keeper do his part; otherwise the work done by individuals is largely nullified by the carelessness or neglect of a few. Where all the bee-keepers are progressive, a simple plan of co-operation would be enough; but, unfortunately, there are in almost all communities some bee-keepers who are either ignorant, careless, or willfully negligent. If, therefore, they will not voluntarily care for their bees as they should, there must be some legal means of compelling them to abate a public nuisance when disease appears among their colonies. Without such a law for regions where disease exists, progressive bee-keeping is difficult and nearly impossible.

Laws providing for inspection of apiaries with the object of controlling disease are, therefore, drafted primarily for the bee-keeper who does not voluntarily treat diseased colonies. The progressive bee-keeper needs no such law to compel him to do his duty. The inspector of apiaries, however, in actual practice, is much more than a police officer; in fact, his police duties are but a small part of his work. However the law may be worded, the good which an inspector does is due in the greater part to his work as an educator. It is the duty of the inspector, specified in the law in most cases, to instruct the bee-keepers how to know disease and how and when to treat. The great good which has been done by the various inspectors in the past has been due almost entirely to this phase of their work.

It is, however, most unwise to set the inspector to work merely as an educational officer without any power to enforce his orders. This has been tried, and appears to be a failure. There are, unfortunately, in almost all communities, bee-keepers who, from obstinacy or spite, must be driven to their duty. Most men, however, when once they learn that they must treat disease will accept the teachings of the inspector.

The following States and Territories now have laws of some kind providing for inspection: California, Colorado, Connecticut, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Mexico, New York, Ohio, Oregon, South Dakota, Texas, Utah, Washington, Wisconsin. Somewhat similar laws exist in New Zealand, some states in Australia, Ontario, Ireland, and parts of Europe. The bee-keepers in several other States are now agitating the passage of similar laws.

These laws may be divided into two groups

—those in which the work is done by men employed by the State, and those in which, by a State, Territory, or county law, the county authorities may appoint inspectors for the county only. Of these the work by State officers has proven much more effective. In States where the counties are small, as in the east, county inspection is of practically no value (e. g., Ohio). In States where the counties are small it is practically impossible to get competent inspectors in every county; and, furthermore, there is not enough work or enough money available to induce a good man to take the work, unless he is doing it merely for the good of the industry. In the West, where some counties are as large as some of the Eastern States, there is more reason for county inspection; but even in these cases the results are, as a rule, not equal to those obtained in States having State inspection.

The chief weakness in county inspection is the lack of co-operation among the inspectors in neighboring counties. There is in most cases not only a lack of co-operation, but too often a jealousy between them which results in a loss of co-ordination in the work. This might be remedied by the appointment of a competent State inspector to whom the county inspectors would be responsible; but county officials would probably object to the appointment of officers over whom they had no direct jurisdiction. A much better plan would be the appointment of enough State inspectors to do the work (e. g., New York), removing all appointments by county officials from consideration.

A special tax on colonies to bear the expense of inspection is sometimes made. When this tax applies to every bee-keeper in the State, no objection can be found to it. The plan of requiring each bee-keeper to pay for the work of the inspector in the actual inspection of his own apiary is most unjust, however (e. g., Nebraska). Inspection is instituted for the benefit of all bee-keepers in the State, and they should pay for it. To compel the bee-keeper who is unfortunate enough to have disease among his bees to pay for work, the object of which is to protect other bee-keepers in the community and State, is unwise, unjust, and shows lack of foresight on the part of the framers of the bill.

In nearly all the laws now in force, there is a provision that the bee-keeper shall not sell, give away, or barter honey from diseased colonies. This is a just provision, but seems to be rarely enforced. Inspectors too often hesitate about enforcing it, either from pity for their brother bee-keepers or from fear of pressure being brought to bear which will cause their dismissal, or perhaps bring about a repeal of the law. The result is that both diseases are being spread to new localities, and other bee-keepers suffer because of this neglect of duty. A bee-keeper has no legal or moral right to endanger the property of others by shipping contaminated honey, yet it is being done every year. An inspector who allows this is not only remiss in his duty but becomes party to the crime. Because of this neglect to enforce the provision under discussion, the bee-disease situation in the United States is becoming worse instead of better; and the good done by the inspectors by education seems to be more than nullified by the harm done by this neglect.

Inspectors and bee-keepers are more careful about shipping diseased colonies to new localities. This is probably because they can see the harm which will result from this procedure more clearly than in the case of shipping honey from diseased colonies. The danger in such cases, while great, is probably much less as a whole than that resulting from the shipping of contaminated honey.

As was pointed out in the discussion of county inspection, the lack of co-operation between the various inspectors is a weak point in our present method of control. While an inspector may now in most cases prohibit the shipping of diseased colonies and contaminated honey to another State, he rarely does so, nor do State inspectors usually report such shipments to each other. If there had been some provision prohibiting interstate shipments of contaminated material, it is probable that we should not now have European foul brood in twenty States, and American foul brood in practically every State in the Union in which progressive bee-keeping is found. If there is no more rigid inspection, our future work on disease control can consist only of the educational work of the inspector. Quarantine regulations will, of course, be valueless when disease is present practically everywhere.

A form of law which, if rigidly enforced, would seem to be the most desirable is given. This must be changed to cover local conditions.

AN ACT FOR THE SUPPRESSION OF CONTAGIOUS DISEASES AMONG BEES IN —— BY CREATING THE OFFICE OF INSPECTOR OF APIARIES, TO DEFINE THE DUTIES THEREOF, AND TO APPROPRIATE MONEY THEREFOR.

Be it enacted, etc.

SECTION 1. In addition to the duties heretofore assigned him, the State Entomologist (or officer in charge of entomological inspection) is hereby appointed State Inspector of Apiaries, and he is empowered to appoint one or more assistants as needed, who shall carry on the inspection under his supervision.

SEC. 2. The inspector or his assistant shall, when notified in writing by the owner of an apiary, or by any three disinterested tax-payers, examine all reported apiaries, and all others in the same locality not reported, and ascertain whether or not the diseases known as American foul brood or European foul brood, or any other disease which is infectious or contagious in its nature, and injurious to honey-bees in their egg, larval, pupal, or adult stages, exists in such apiaries; and if satisfied of the existence of any such diseases he shall give the owners or care-takers of the diseased apiaries full instructions how to treat such cases as, in the inspector's judgment, seems best.

SEC. 3. The inspector or his assistant shall visit all diseased apiaries a second time, after ten days, and, if need be, burn all colonies of bees that he may find not cured of such disease, and all honey and appliances which would spread disease, without recompense to the owner, lessee, or agent thereof.

SEC. 4. If the owner of an apiary, honey, or appliances, wherein disease exists, shall sell, barter, or give away, or move without the consent of the inspector, any diseased bees (be they queens or workers), colonies, honey, or appliances, or expose other bees to the danger of such disease, or fail to notify the inspector of the existence of such disease, said owner shall, on

conviction before a justice of the peace, be liable to a fine of not less than fifty dollars nor more than one hundred dollars, or not less than one month's imprisonment in the county jail, nor more than two months' imprisonment.

SEC. 5. For the enforcement of the provisions of this act the State Inspector of Apiaries or his duly authorized assistants shall have access, ingress, and egress to all apiaries or places where bees are kept; and any person or persons who shall resist, impede, or hinder in any way the inspector of apiaries in the discharge of his duties under the provisions of this act shall, on conviction before a justice of the peace, be liable to a fine of not less than fifty dollars nor more than one hundred dollars, or not less than one month's imprisonment in the county jail, nor more than two months' imprisonment.

SEC. 6. After inspecting infected hives or fixtures or handling diseased bees, the inspector or his assistant shall, before leaving the premises or proceeding to any other apiary, thoroughly disinfect any portion of his own person and clothing and any tools or appliances used by him which have come in contact with infected material, and shall see that any assistant or assistants with him have likewise thoroughly disinfected their persons and clothing and any tools and implements used by them.

SEC. 7. It shall be the duty of any person in the State of —— engaged in the rearing of queen-bees for sale to use honey in the making of candy for use in mailing-cages which has been boiled for at least thirty minutes. Any such person engaged in the rearing of queen-bees shall have his queen-rearing apiary or apiaries inspected at least twice during each summer season; and on the discovery of the existence of any disease which is infectious or contagious in its nature, and injurious to bees in their egg, larval, pupal, or adult stages, said person shall at once cease to ship queen-bees from such diseased apiary until the inspector of apiaries shall declare the said apiary free from all disease. On complaint of the inspector of apiaries, or of any five bee-keepers in the State, that said bee-keeper engaged in the rearing of queens is violating the provisions of this section, he shall, on conviction before a justice of the peace, be liable to a fine of not less than one hundred dollars nor more than two hundred dollars.

SEC. 8. The inspector of apiaries shall make annual reports to the ——, giving the number of apiaries visited, the number of diseased apiaries found, the number of colonies treated, also the number of colonies destroyed, and the expenses incurred in the performance of his duty. He shall also keep a careful record of the localities where disease exists; but this record shall not be public, but can be consulted with the consent of the inspector of apiaries.

SEC. 9. There is hereby appropriated out of any moneys in the State treasury, not otherwise appropriated, a sum not exceeding —— per year, for the suppression of contagious bee diseases among bees in ——. The salary of the deputy inspectors shall be determined by the State Inspector of Apiaries.

SEC. 10. All acts and parts of acts inconsistent herewith are hereby repealed.

SEC. 11. This act shall take effect immediately.

IS RHEUMATISM EVER CURED BY BEE-STINGS?

BY DR. A. F. BONNEY.

How many have been stung times untold, and still have rheumatism? I will add my testimony to that of Mr. Crane, last year, by stating that I have the muscular rheumatism just the same as before I became practically immune to bee-poison. My friend Mr. Ray, who lives a few miles south of me, will say the same.

I consider the popular belief, or superstition, that bee-stings will cure rheumatism illogical, unsupported by conclusive evidence, and with no foundation in fact, and shall call attention to one of the strongest cases you have published, that of Mr. Landis, p. 153, last year. His case is weak, because rheumatism is very frequently self-limited, i. e., *nature* expels the poison, uric acid, and the patient recovers, frequently without any medication whatever. Mr. Landis says, "I took all the truck imaginable."

Patent-medicine men frequently win as do the bees. They chance to get the last whack at those who take "all the truck imaginable," and thus they get the credit of curing all sorts of ailments, from corns to ingrowing conscience.

Now, let bee-men write briefly on the subject, for I believe nine-tenths of the people have rheumatism some time, as do many of the dumb brutes, and I shall not be surprised to find that even the bees themselves suffer from it; and when the evidence is all in I do not think there will be any thing more heard of the ghost story that bee-stings cure rheumatism or any thing else unless it be a placid temper, even when applied "gently," as in the case of Mr. Lewis, the hired hand Mr. Crane mentioned in connection with himself, May 15, 1908; and going into *that* case, I, from much observation, can almost declare that the man's trouble would have abated shortly without any other treatment than getting out of "a damp pulp-mill."

Buck Grove, Iowa.

THE CONSUMER'S DOLLAR.

BY WESLEY FOSTER.

Considerable talk, with figures to emphasize the points, has been going on in the farm papers concerning the per cent of the consumer's dollar that the producer gets. The idea most held is that the producer should have it all, or nearly all. A question might be asked as to what production is. Is it not as much production to carry a case of honey a thousand miles as it is to carry a super into the honey-house? Then if we are to eliminate the middleman (and we should, just as much as possible), what share of this saving belongs to the consumer? Manifestly a part does belong to the consumer, though if the producer pushes out the middleman he will feel that the credit and profits belong to him. If I sell ten cases of comb honey at grocery stores in Boulder at from $2.75 to $3 25, or an average of $3.00 per case, it will bring me $30.00. This honey is retailed by the grocer at 15 to 20 cts. per comb, a larger amount retailing at 15 than at 20 cts. Grocers here never sell any thing at 16 or 17; it's either 15 or 20 or 25.

The average for those ten cases would not run over 16½ cts. retail, or $3.96 a case; so out of a retail price of $39.60 I got $30.00 from the grocer, or over 75 per cent. If I shipped to a commission house in Denver, the express would be $1.00; cartage, 25 or 50 cts.; commission ten per cent, or $3.00, and I would get only about $25.00 out of a retail price of, say, $40,00, or 64 cts. of the consumer's dollar. These prices are higher than the average, and net the producer more than is ordinarily received. One-half is about what I would say the producer gets of the consumer's money.

HEADS OF GRAIN

FROM DIFFERENT FIELDS

GIVING THE TRUE NAME OF HONEY-DEW; PLANT OR ANIMAL ORIGIN.

I should like to ask whether a chemical analysis shows honey-dew honey to be "bug juice" as stated on page 540, Sept. 1. If so, should not we bee-keepers be as honest as we expect the glucose people to be, and brand such honey as "bug juice"?

In 1884 I secured about two tons of this honey-dew, and at that time I had a lot of men cutting off sixty acres of timber, and so I visited the woods every few days to investigate the source of the honey-dew. I found the bees gathering it almost entirely from the leaves of the oak, hickory, beech, and wild grapevine. These trees and vines bore no fruit that year; but from the pores of each leaf, during hot afternoons, a small speck of brown gum or sugar could be plainly seen with a glass; but it was just barely visible to the naked eye. The dew the next morning thinned this gum, and in some instances it was so abundant as to drip on the other foliage. I never could see any bugs of any kind, even with the magnifying-glass.

The honey that I secured that year was very dark but sweet. I sold several thousand pounds of it to a large bakery, and could have sold ten times as much.

For several years, including this year, I secured a very black, ill-flavored honey, and a careful investigation showed that it came from the gum timber, especially the black gum. In no case could I find any insects, even when I cut the trees down. I use this honey only for brood-rearing in the summer and spring.

Dupont, Ind. S. E. O'NEEL.

[We do not know whether a chemical analysis would show the difference between a honey-dew that has its source in plant-lice and one that is in reality an exudation from the leaves of certain plants. As we understand it, there are two kinds of honey-dew. One is the product of insects that secrete (or excrete?) it on the leaves of certain plants, and the other is a real exudation of saccharine matter from the leaves or stalks of certain other plants. Of this latter there is so little that we may almost say that all the honey-dew we know any thing about is of animal origin.

There has been some controversy as to whether the honey-dew, of which there was such a large quantity gathered last season, was really an animal or vegetable product. During the past summer, when this question came up we found that insects (probably plant-lice) were present in the vicinity and on top of the trees from which the bees gathered this honey-dew. We believe, therefore, that the larger portion of the honey-dew of last season was of animal origin.

As to whetner this saccharine matter is an *excretion* or a *secretion*, we may say that the impression has gone out that it is an excretion. Prof. Cook has said that it is a secretion. Prof. Surface, while apparently admitting that it may be an excretion, appears to think it is more probably a secretion from certain glands.

A prominent English authority, Dr. D. M. Macdonald, claims that it is all a mistake to suppose that honey-dew is ever an excretion. If this is true, then the product has received in years past a bad name it does not deserve.

But we do know this: A good many kinds of honey-dew are of fine quality, sell readily, and some of them are even light-colored.—ED.]

SOME PROOF SHOWING THAT SWARMS MAY CARRY FOUL BROOD; CAN FOUL-BROODY COMBS BE USED SAFELY FOR EXTRACTING PURPOSES?

In your answer to the query of J. G. Crisler, Walton, Ky., on page 677, you say, "We may say that a swarm from a colony affected with foul brood will not carry disease." I should like to take issue with you on that statement, as I have observed time and again that if, say, No. 44 casts a swarm which is hived in No. 45 hive, and afterward it is found that No. 44 is affected with foul brood, it will be only a question of a short time until the disease appears in No. 45. I have followed it even further, and found that a virgin swarm will develop foul brood if it can be traced back to an original foul-brood colony. I have kept a record for seven years past; and when I discover a colony with foul brood I immediately examine the swarm or swarms cast by that colony, and invariably find the disease. I have about made up my mind to hive such swarms on starters, and in four days shake them on to full sheets, treating the swarm as by the McEvoy method. I have always used full sheets of foundation; and why is it not possible for the new swarm to carry sufficient of the infected honey to have some stored in the cells of the full sheets? It seems to me to be a very important matter; and it may be advisable, in a community where the disease exists, to use only starters in the brood-chamber.

Along these lines there is another subject, closely allied, which was brought to my attention a few days ago. I was talking with Mr. Stewart, of Prophetstown, and he tells me that he has discontinued the practice of destroying foul-brood combs, and now uses them and the body holding them as an extracting-body. He informs me that for the past four years he has followed this plan with no bad effects—that even the queen will go above and deposit eggs which hatch out, and the parent colony will not show any signs of the disease. He does not use queen-excluding boards, as he thinks he gets less honey with their use. Now, right here would be an immense saving if one could use infected combs for extracting-combs with impunity. I melt up on an average 100 combs a year, some of them, especially the outside ones of a hive, showing no indications of coming from a foul-brood colony. I should be pleased to have your opinion on the matter.

Morrison, Ill. CHAS. G. MACKLIN.

[Referring to p. 677, we were discussing whether or not a swarm would carry germs of foul brood into a hollow tree where they expect to make their future home, and in which they will necessarily have to build comb before they can provide a place for storage. Such swarm, to all intents and purposes, undergoes the standard treatment for foul brood—namely, shaking on to frames of foundation or foundation starters. It is generally considered that the very act of building comb, whether from starters or from a natural support, consumes all the honey in the honey-sacs of the bees that may contain the germs of disease. To make assurance doubly sure, Mr. McEvoy recommends that the first set of combs built from foundation be melted up, compelling the bees to build from a second lot; but in actual practice we have found it quite sufficient to shake or brush once on foundation in clean hives. In all our experience we have never had a failure.

If a swarm out of a foul-broody hive goes into another hive containing drawn combs, then it is altogether probable that the disease will be carried to those combs; for the bees would immediately empty the honey they carried with them into them.

The case referred to on p. 677 is quite different from the cases mentioned by you, in which it is apparent that the bees were hived on full sheets, for you say you have since made up your mind to hive all such swarms on starters. Now, then, if such swarms go into a hollow tree they go further—they are compelled to build their own virgin comb, and during the process use up any honey they may have in their sacks; or, to put it another way, a swarm that flies naturally into a hollow tree subjects itself automatically to a treatment that is practically the same, and is the same to all intents and purposes as if that colony had been treated by brushing or shaking on to starters *a la* McEvoy.

We would not approve of the plan of putting combs from diseased hives into extracting-supers. While, ordinarily, no disease will be carried in that way, we would consider it a risky thing to use such combs, and very dangerous advice to send out broadcast to the public generally. We have, as we think, ample proof that combs will carry the disease for years, even when there is no honey in them.—ED.]

CLEANING EXTRACTORS, DANZENBAKER FRAMES USED FOR EXTRACTING, ETC.

What is the best way to clean tanks, cans, extractors, and utensils? I have some new honey-tanks, an extractor, etc.; and I gave them a good cleaning and extracted some honey in them; but the honey tasted of rosin, and I don't know what could have accounted for it unless it was the rosin that was used in soldering the cans and tanks.

Is there any way that such honey can be used without having that rosin taste to it? Could it be used for making honey vinegar without having a rosin taste?

Is there a comb-bucket made for Danzenbaker frames? If so, how many frames will it hold?

How can one space the Danzenbaker frames further apart in the extracting-supers? Nine frames would be plenty, for when there are ten frames the combs are not bulged enough to be uncapped easily.

May weak colonies be united any month of the year? What time is recommended for uniting colonies for

winter? Where can one get good barrels for storing and shipping extracted honey? Will alcohol-barrels spoil the honey? RICHARD HANLON.
Inland, Neb., Aug. 20.

[We know of nothing better for the average person than hot water to clean tanks, extractors, and the like. Steam is better where it is available.

We question very much whether the odor of rosin from the slight amount in the cans can be imparted to honey; and on this point we would be pleased to get reports from bee-keepers who may be in position to offer facts. In the mean time we should be glad to have you send us a sample of the honey in question. It is our opinion that the flavor you find in it is due to some particular source, and not to any substance inside of the storage-receptacles.

You can doubtless get comb-buckets for the Danzenbaker frames by applying to your dealer. An ordinary extracting-super, or, rather, a couple of them, placed on a hand-cart or wheelbarrow, would be cheaper and have a much larger storage capacity, and more satisfactory in every way. See "Extractor" and "Extracted Honey" in the A B C and X Y Z of Bee Culture.

There is no practical way of spacing Danzenbaker frames further apart in the extracting-super.

Weak colonies may be united in the fall; but if any during mid-winter become weak, and the weather is warm enough so bees can have occasional flying days, they can be united; but before doing so we would advise shaking the bees, to be moved to another location, into a wire-cloth cage, and keeping them there for 24 hours. At the end of that time scoop them up by the dipperful and deposit them in front of the entrance of the hive or hives where they are to make their permanent abode. They will soon crawl in, and, to all intents and purposes, will stay where put like a swarm. If united in the regular way, by carrying frames of bees to the hive to be united, a large number of bees will be sure to go back and get lost.—ED.]

OLIVE-GREEN HONEY.

Under separate cover I am sending a sample of honey, and your opinion as to its kind and quality would be appreciated. I think it is from asters, as bees were working on that flower when the honey was stored.

It might be well to explain that I have a single hive of bees on my back porch in the city; and while in Stapler's supply store one day about the first of October they told me they were selling honey to the country folks to feed their bees for winter. This being the case, I purchased a feeder and went home prepared to feed. Upon taking off the super I found the brood-chamber full, and 6 lbs. in the super of honey, like the sample. The last time I looked into the super was about Sept. 15, when it was empty, so the flow had occurred during the last two weeks of September. How can you account for my getting a surplus when the country folks were compelled to feed?
Pittsburg, Pa., Oct. 18. R. MCCULLOUGH.

[The sample has been examined, and it is quite remarkable. It is the only one we have ever seen where the honey was of a deep olive-green color. The flavor is suggestive of some fall source — possibly aster; but an aster honey does not have this peculiar color. The fact that all your neighbors' bees were on the verge of starvation, and that your one colony stored all of this honey, would lead us to suspect that your bees helped themselves to some artificial supply. Possibly, if you would make inquiry you would find where your bees had been helping themselves freely to some green fruit-preserves of some sort, for the strong olive-green tinge rather suggests this.—ED.]

PREVENTING WAX FROM STICKING TO THE FOUNDATION-MILL.

When running sheets of wax through a foundation-mill, try putting a rather heavy piece of paper on the end of the wax as it starts between the rolls. When the paper is used it is very easy to get the end of the wax sheet loose from the roll.
Ontario, Ore. M. TOWNSEND.

[If the rolls of the mill are set close enough together to give a good thin base to the cell we should be afraid that there would be danger of crushing the metal if thick paper were used. We tried very thin tissue paper bent over the end of the wax, and are not sure but it helps. Furthermore, if this very thin paper were used it would not be necessary to throw away the end, as it yields perfectly to the shape of the foundation, and it is so thin that it probably would not be objectionable to the bees.—ED.]

KEEPING BEES IN GARRETS; WILL SUCH COLONIES SWARM?

I have eleven colonies of bees that I purchased some years ago, and have kept them on the ground—that is, in hives on blocks. I have a large attic in my house, and it has been suggested that I could fit it up as a large bee-hive, placing, say, one hive inside, and then putting the small pound boxes along on poles, etc., allowing the bees to fill these boxes, and removing them when full, etc. In this way the bees would never swarm, and would continue to multiply indefinitely.
Gulfport, Miss., Nov. 1. GEO. L. CARLEY.

[Under the head of "Swarming," in our A B C and X Y Z of Bee Culture, you will find, toward the close of a general discussion on that subject, an article on keeping bees in upper rooms and garrets. As this appeared in our 1879 edition you can see that the idea is old. It is perfectly feasible to keep bees in a garret; and while some hang the frames on supports without a hive, others find it more feasible to use ten or twelve frame standard hives tiered up four and five stories high. Such hives are vastly more convenient to handle, and, when tiered up as explained, always keeping well ahead of the queen, there will be little or no swarming.

We do not think it would be practicable to put the section boxes on poles or supports in the room. The sections themselves would have to be in close contact with the general cluster of the bees. If it is your purpose to keep down swarming you had better not attempt to produce section honey.—ED.]

THE ABSORBENT MATERIAL BECAME DAMP; SEALED COVERS PREFERRED.

In the fall of 1907 I packed some 35 colonies outside, using an old piece of woolen carpet and several folds of newspaper directly over the frames, and the bees came through all right the next spring. In the fall of 1908 I tried the same plan with 70 colonies, but for some reason or other the carpets were very damp when I opened them up last spring, and in a good many instances not only was the carpet damp but it was wet enough to wring water out. The newspapers were damp as well, and altogether I found conditions far from favorable. I packed the hives which were placed 15 in a row all around and over the top with forest leaves, leaving the front or south end exposed. My winter loss last winter was only one colony out of the 70 so packed, while those put in the cellar did not give as good an account of themselves. I think I am safe in saying, however, that those with the damp carpets did not build up as fast as those that were in the cellar, possibly due to the excessive moisture. I shall use sealed covers this fall with some 150 that I expect to pack outside. My hives were all slanted toward the entrances, and I noticed considerable water running out on warm days last winter, so that the carpets must have frozen stiff or else the moisture collected on the sides of the hive and then ran down. Which was it?
Morrison, Ill., Nov. 2. CHAS. G. MACKLIN.

[Our experience has been practically the same as yours. We can't understand why any one should get better wintering results by the use of damp, wet, or (worse yet) frozen absorbents.—ED.]

CANDIED HONEY FOR A WINTER FOOD.

We have a lot of section honey that has partly candied on account of dry hot weather and no honey-flow, and so it could not be capped. Can this be fed back by putting it in supers and putting a super on the hives and leaving it there all winter?
Glyndon, Md., Oct. 21. C. STANSFIELD & BROS.

[While you might be able to feed your colonies by giving them this candied section honey in the manner you outline, we would recommend holding it until next spring. In the mean time, if the colonies are short of stores, feed them sugar syrup. While bees will winter after a fashion on candied honey, we would much prefer to give sugar syrup.

You say that the sections are not capped over. If that be the case they might be soaked for a few hours in warm water and placed in the honey-extractor, where most of the water and the honey would be thrown out. This product could be fed to the bees next spring in regular feeders, and the sections could be placed upon the hives for the bees to clean up in the manner outlined in your first paragraph.

If any one has had any experience in giving candied or partially candied honey for the bees to winter on we shall be glad to have him report what success he had.—ED.]

WHY HONEY FROM THE SAME PLANT MAY VARY IN COLOR.

On page 638, Oct. 15, Mr. Baldwin asks for the experience of others as to what darkens the color of orange honey in parts of Florida. In this locality the bees get a very dark-red honey in the spring, from the gum-tree bloom, I think, and a small quantity of it reddens a large amount of light-colored honey. I know that this honey is not gathered in the fall, as my fall flow is of fine flavor, a little amber in color, and is from a species of goldenrod that grows on low damp lands. I have taken the first premium on comb honey at three Florida State fairs, and each time I exhibited this goldenrod honey. Different writers do not agree on the description of goldenrod honey. One may describe it as dark and of bad flavor; another, as light and perhaps bitter. This difference can be laid to both the locality and the soil, for there are over fifty varieties of goldenrod. We have four distinct varieties here that I know of. Three grow on high dry land, and I never saw a bee working on any of these three varieties. The fourth, that which grows on the drained muck land, makes a fine honey-producer.

The gum referred to above blooms early; and when I put on the sections the bees start in them later than they do in the extracting-supers provided with drawn combs. For this reason the sections are not likely to contain much of this red honey. Furthermore, extracting-frames containing only foundation given the bees during the main orange bloom are much more likely to have the light honey like that in the sections. I am quite sure that the red honey is not from the palmetto-berries, because the honey which the bees transfer in the spring from the brood-nest into the extracting-supers is always light-amber, and it granulates. I have sometimes found half a frame of the dark honey just stored in the spring over a strong colony, while the old honey crowding the brood below the excluder was amber goldenrod.

Apopka, Fla. FRED E. MARDEN.

LIQUEFYING HONEY FOR BOTTLING; MR. FOWLS' PRESENT METHOD.

In a letter to the editor, Mr. Adolph Loehr, Whitstone, Long Island, N. Y., asks whether I use a water-jacket around my filling-tank that I use in filling glasses.

When I wrote the article for GLEANINGS, eight or nine years ago, describing my method of liquefying and filling glasses with honey while hot, I used to keep the tank over a gasoline-burner so as to keep it up at the desired temperature; but of late years I have kept no heat under it at all, not finding it necessary. If for any reason I am not ready to commence filling the glasses when the honey is all liquefied, I leave it standing in the melting-tank with the heat low enough so there will be no danger of overheating.

When all is ready to begin I transfer it to the filling-tank and run it out in the glasses. As there is only about 75 lbs. in a can it takes such a short time I find it stays hot long enough.

I now use a piece of rubber hose to syphon out the honey; and while it is not as pretty as my old glass syphon, and does not make such a "pretty effect," as the milliners say, because you can't see the beautiful liquid running through it, the hose starts easier and never gets out of order. CHALON FOWLS.

Oberlin, Ohio.

[Our older readers will remember that Mr. Fowls does a large business in bottling honey, and his statements can, therefore, be taken as coming from one who knows what he is talking about.—ED.]

CAN SWARMS CARRY DISEASE?

You say, page 677, Nov. 1, that swarms going from foul-broody colonies will not take the disease with them. If this is so, why is it necessary, in treating colonies for foul brood, first to shake them on to starters, and afterward on to sheets of foundation?

Walton, Ky. J. G. CRISLER.

[We have never found the second shaking in our locality necessary. One shaking, we venture to say, will cure ninety-nine times out of a hundred anywhere. For that reason, bees in a tree should be free of disease unless they rob from some colony that is already affected.—ED.]

IS SORGHUM A GOOD WINTER FOOD?

Nearly all the bees in this community are eating up their stock of honey; and those that winter will have to be fed. I am writing to ask if a good quality of sorghum will do to feed them. I found one old stand the other day without any honey in sight, and I have begun to feed them, as there is a large amount of bees; and if sorghum will do I can feed them without any expense. Is it advisable to put sugar or candy of any kind in the hive for them to work on in the winter? I can buy stands in the neighborhood for a dollar apiece, but they would have to be fed at once. Would it likely be a good investment?

Last winter I bunched the hives and built a small shock of orchard-grass straw over them, making it heavy enough to keep them perfectly dry. Do you think that a good way to protect them through the winter? JOHN B. PEELLE.

Sabina, Ohio.

[While sorghum in many cases will bring our bees through the winter in fair condition, you had better by far feed syrup made from the best granulated sugar. In point of feeding value it is about as cheap, and *much safer*.—ED.]

IS TOBACCO HARMFUL TO BEES?

Will tobacco bloom kill bees? To-day I noticed the grass in front of my hives literally covered with bees. They seemed to be about tired out, and unable to fly again. The majority of them have pollen on their legs, of a brownish-yellow color. There is a lot of tobacco in bloom around within a radius of two miles, also buckwheat-fields. The weather is quite warm, so they were not chilled.

St. Eugene, Ont., Aug. 18. J. A. MCKINNON.

[We do not remember having read any reports showing that the nectar from tobacco-blossoms apparently intoxicates the bees as here related; but we see no reason why it should not have precisely that effect, provided the bees get enough. Perhaps some of our readers in the tobacco regions will be able to enlighten us further.—ED.]

GOOD WINTERING IN A CELLAR HAVING TWO FEET OF WATER IN IT.

In regard to upward ventilation in wintering, p. 654, I want to give you some of my experience. Several years ago I had 21 colonies in a cellar in which there was two feet of water from February 2 until the bees were taken out April 3; yet they wintered perfectly although the covers were off the hives, and entrances open. S. FRITSCHEL.

Clinton, Iowa, Nov. 2.

[We have had other reports of like character; but these do not necessarily signify that such conditions are ideal. It is the exception that proves the rule.—ED.]

I am going to unite three or four weak colonies into one; but I should like to save the queens (pure red-clover Italians of a very good quality) for next spring. Kindly tell me which would be the best plan to save those queens. F. W. HERZ.

Harrisville, Wis., Oct. 20.

[If you have no other colonies in the yard we do not know what you would do with the extra queens except to pinch their heads. You might, however, make up some two-frame nuclei and introduce these surplus queens to them, after which put nuclei down cellar and keep them until settled warm weather comes on next spring.—ED.]

AMERICAN BASSWOOD.

In GLEANINGS, July 15, page 442, I find an article on European and American basswood. Up here basswoods grow wild in the woods. What kind are they?

Nerstrand, Minn. F. W. SMITH.

[The basswood that you find almost anywhere in the United States growing wild is what is known as the American variety.—ED.]

CORNER BAITS PREFERRED.

On page 611, Oct. 1, W. M. Whitney says he preferred the baits in the corners of the sections. With the exception of the first year I kept bees I used baits in the corners. Bees will then work in the whole super evenly and leave no gobacks. I had one very weak colony that began work in one corner first this year.

Stockport, Iowa, Nov. 1. C. R. DEWEY.

OUR HOMES

BY A. I. ROOT.

And the Lord God planted a garden eastward in Eden; and there he put the man whom he had formed. And out of the ground made the Lord God to grow every tree that is pleasant to the sight, and good for food. —GEN. 2:8, 9.

OUR FLORIDA HOME.

Adam's first home was in a garden; and his and Eve's first occupation was "making garden" and tending the things in the garden. We can imagine somewhat the fun they had in looking over this garden and studying the many curious and beautiful things in it, tasting the strange new fruits (the *unforbidden* fruits), and discovering the wonderful new flowers, one after another. There is hardly a doubt that Adam, every now and then, put his arm around Eve and declared *she* was the most *beautiful* and *precious* flower of them all; but we can not stop to discuss that feature of the garden of Eden just now, for I have started to tell you about our "Florida home."

Before I start out, however, I want to warn you that this morning I shall very likely overdraw Florida. First, I am feeling exceedingly well, and, of course, happy. I am really in love with my dooryard, garden, chickens (including the "Buttercups"), and last, but by no *manner of means* least, my neat, trim, energetic, lovable "helpmeet."

I don't mean, dear brother, she is any *different* from or any better than other women (may God bless the *whole lot* of them); and if your own wife is not *to you* all that I have said in the above, go to work and make her so. It is your *privilege* (and a glorious one) and your *duty*.

Now one more caution: *I* am quite likely to be happy anywhere. I suppose I am largely "built that way."* After I began marching under the banner of the Lord Jesus Christ (with a clear conscience toward God and mankind) why *shouldn't* I be happy? I am like the boy I met in California on top of the mountain. When I asked him how he liked living away up there he replied:

"Why, Mr. Root, *I* like to live *anywhere*."

I suppose I could be comparatively happy in my northern home just how; but I tell you I have found it a great comfort to get where I can work outdoors all day long without needing a clean pocket handkerchief for even one minute.

When I spoke of the disagreeable things in Florida a year ago or more, I mentioned the black sand that is almost, in spite of you, getting tracked on the floors and porches. Well, to help Mrs. Root in her efforts to keep the house tidy we planted our dooryard to Bermuda grass; but while we were away the summer after, our flock of chickens ate it all up, root and branch. Last winter we tried it again, and now we have about the finest sod and nicest grassy lawn I ever saw. It pushed clear up under the fences, up around the doorstep, and clear up under the house. Wesley (our colored man) planted some, in the summer, down in the deserted poultry-yard; and now *that* is a great mass of luxuriant Bermuda. My sixty or seventy fowls roosted one winter on a certain pine-tree. We wheeled away the droppings several times. So much fertility killed the tree, but not so the Bermuda. All around and under that tree is now a perfect mound of rank luxuriant green. My eighty Leghorns are enjoying it, and it looks now as if it might grow as fast as they can consume it.

We came into our house after dark; but I noticed by the moonlight a very thrifty plant at the corner of the porch. At daylight Mrs. Root said she wondered why I had not gone into ecstacies over that bougainvillia on the front porch; and when I looked I raised both hands while I exclaimed, "Oh! was there *ever* a more beautiful plant?" and, to *think* it all "our very own"! Again and again as I would come on to it suddenly it gave me a start and an uplift I can hardly describe. There is at least a heaping bushel of the brilliant magenta-colored flowers (or rather, perhaps, bracts, that surround the real flower); and when the morning or evening sunshine illuminates them in a certain way the sight is almost entrancing. If Adam and Eve had such a vine in their garden they might have thanked God for it and been supremely happy *without* going near the forbidden tree.

Now, I can't tell my story without mixing up flowers, fruits, and chickens; so you will have to let me tell it my own way.

I put five of the "Buttercup" chickens in a half-bushel basket covered with wire cloth, and expressed them down here for $1.60. When I let them out they flopped their handsome gauzy wings, and said as plainly, almost, as did the boy, "*I* like to live *anywhere;*" and when they sampled the Bermuda grass I imagine they voted a preference for Florida over Ohio, especially in *November*. While the Buttercups are as full of life as the Hamburgs, they are very much unlike them in being about the gentlest chickens I ever saw. Our dooryard and lawn are forbidden ground nowadays for poultry; but the Buttercups soon gave us to understand that where *I* went *they* went also. When building a fence around my new acre (it cost $1.50, and is for our new and enlarged chicken-yard) they were away out in the street along with us; and when I stopped to admire again the bougainvillia they were at my heels, and, it seemed to me, looking the whole plant over with wonderful interest.

Let me explain that, for several days, I had been trying to discover what insect or worm it was that was eating off the tender twigs and foliage. Mrs. Root made the discovery that it was a sort of measuring worm that, when surprised, assumed the form and attitude (?) of a dead twig. I at first de-

* It occurs to me that it is, after all, largely a matter of *choice* whether we shall be "built that way" or some other "way."

clared it *was* only a twig; but when said "twig" was cut *in two* it proved to be a live insect all right. Well, this "mimic" worm didn't fool the keen sharp eyes of the Buttercups. Not much they didn't.

All the plants on our place came from Reasoner Brothers' Tropical Nursery, Oneco, Fla. If you want to know more about them, prices, etc., send for their catalog. When one of Mr. Reasoner's men told me it was possible to get oranges from a newly planted tree in *less than one year* I thought it must be a mistake; but a little tangerine-tree just inside the poultry-yard gate has now on it eight beautiful oranges, and the tree was set out last February. Bananas in that same poultry-yard, set out in February, are now 15 or 20 feet high, and one plant has a stem of fruit that will make a pretty good load to carry. The plants, when set out, were but little more than a foot long; but now some of the leaves are a foot broad, and six or eight feet long. They are growing on the bank of a ditch where Wesley planted oats all last winter for the chickens to dig up. If you want to get a piece of ground so it will grow almost any thing, put 50 chickens on, say, one-fourth acre, and dig it over and over in planting oats for the fowls to dig out. In this way you get the ground well pulverized and fertilized at one and the same time, and the chickens *ought to pay* for doing the work.

Now, friends, the letters I have on hand (too many of them unanswered) indicate that a lot of you want to know about Florida; but I find I can not stand writing letters as I did when younger. May I make this request? Before writing me, especially at length, will you first look over the back numbers of GLEANINGS and see if I have not already answered in detail? If you do not find what you want to know, say in the outset you have followed me in the journal, and I will try to help you all I can. Below is a letter that I have answered briefly as an illustration.

Mr. A. I. Root:—I want to see Florida before we locate again. I should like to have your opinion on some things, for I am sure you will give it just as you see it. I have been thinking of going to Jacksonville. I have never been in the South. My idea is to raise fruit, vegetables, and poultry. What part of the State do you think best to locate in?

Can't answer.

How is it for health, both winter and summer?

Very good in winter; have never spent a summer here.

Can apples and peaches be grown that far south?

Peaches but not apples, so far as I know.

What kind of drinking-water do you get—hard or soft?

Mostly soft water; but we drink rain water.

Is it extremely windy or not?

Usually still at night; fair breeze in daytime.

What do you think of the truck-farming and poultry-raising there for a living?

Very good here. See what I have written in back numbers.

Is the colored population very troulesome? We have never been among the negroes.

Not at all troublesome here.

Are the schools in Florida as good as they are in the North?

I think they average as good.

I have lived most of my life in Kansas. I suppose there are almost all kinds of churches where you are. Are there any Primitive Baptists there?

All kinds of Baptists and almost every other denomination; too many "kinds," I think.

What is land worth, improved or unimproved?

Land is worth from *one* dollar an acre to $1000 or more, depending on the kind of land and nearness to railroad station or steamboat landing. My neighbor across the way would not sell his improved strawberry and lettuce land for *one thousand dollars* per acre.

I should like to get any information that you think would be of interest to me, or any literature that is reliable.

The best advice I can give is to get back numbers of GLEANINGS and read what I have written about Florida for the past three winters.

What do you think is the best proposition for a man to make a living at?

Lake Arthur, N. M., Nov. 7. M. C. SWINNEY.

Can't answer without knowing the man.

POULTRY DEPARTMENT

BY A. I. ROOT.

IS IT EGGS AND MEAT WE WANT, OR IS IT FANCY FEATHERS AND A GOOD-LOOKING CHICKEN?

For years past, the matter has been discussed in our journals, and thrashed over and over again on the question, "Are we working for golden-colored bees, and bees nice to look at, gentle to handle," etc.? or "Are we working for bees that gather honey—bees that 'deliver the goods?'" to use a slang phrase. Years ago when a man paid a big price for a queen he sometimes made an awful kick if she was not nice and yellow, and a beauty *to look at*. I have not heard much of this of late; but I believe bee-keepers generally have come to the conclusion that it is the *honey* we are after rather than good looks. After we have got the honey, gentle behavior comes in next; and, last of all, or at least it ought to be last of all, *nice-looking* bees.

Well, the same thing comes up with poultry. Thirty or forty poultry journals, and no end of poultry shows, are devoting the greater part of their time to breeding stock that scores according to somebody's standard. I came pretty near saying somebody's *notions*. Then prices are fixed on the good looks—not only $5.00, $10.00, $25.00, $50.00, $100, but that pullet Peggy, that you have all read about, is worth $10,000, and her eggs are selling for $2.00 apiece. All right. Go ahead if you want to. I prefer the hen or the strain that lays between 200 and 300 eggs in a year. But you can not put any very big price on such a hen, for the Maine station has told us that she is "no good" for a breeder. If you have her *mother* in your possession it is reasonable to suppose this mother's eggs will give us more pullets like herself; and I think the tendency goes that way. If you want a high-priced rooster, get one that is *brother* to a hen that makes the big record of eggs, and you are all right.

In our Sept. 1st issue I told you of a visit to a Leghorn farm of something like 1500 laying hens. I said to my young attendant, "Your father probably buys a high-priced rooster or two every season, to put in his breeding-pens, does he not?"

I was astonished to learn that he did nothing of the kind. They selected their White Leghorn roosters from some pen in another part of the farm. Since then Mr. Swift said, in a conversation with a friend of mine, something like this:

"For many years I tried buying high-priced males, not only as a cross, but to get something better. Well, I wasted a lot of money year after year. I did not get any a bit better for the egg business than my own stock on my own farm. Therefore my son's statement was true. I stopped buying, not only high-priced roosters but roosters of any kind; and I am well satisfied that the males from a distant part of my farm are just as good as any thing I can buy."

Now, I can not quite agree with Mr. Swift; but very likely it *is* true that the high-priced fowls that were advertised and shown at the shows were no better for eggs than those he had at home; and I am afraid this is true, no matter *how* high a price he pays.

Now, there is another piece of "iniquity" that crops out right here. Several of the poultry journals are now coming forward and declaring that the high-priced fowls shown at shows and fairs are "doctored." They pull out undesirable feathers, or paint them over with something. They wash the chickens in bluing-water to make a brighter white, and they are doctored up all over, just the way old women used to doctor themselves up years ago (?) to make believe they were "young ladies" instead of old ones. I suppose this doctoring and making fake fowls is a plan to humbug the judges; and there has been complaint made sometimes that the judges have been bribed.

Well, some beginner like myself wants to start out with a choice strain. Say he wants to get a start with the very best White Leghorns. May be he consents to pay $25.00 for a choice male, and $5.00 apiece for some choice females to match. Suppose this honest, unsuspecting, innocent man pays out his hard-earned money and gets some doctored chickens that are no better than he could have gotten in his own neighborhood for, say, a dollar apiece.

Our farming friends have been severely criticised because the average flock of chickens is of all kinds mixed together. Now, while he may get a good lot of eggs from such a mixture I do not believe it is the thing to do. I think he will get more for his eggs if they are all of one color or as nearly so as possible; and I am sure he will get more for his "spring chickens" if they are all white or all black, or whatever the color may be. I do not believe it is best to mix things up. Besides, everybody admires a flock of chickens all just alike. I paid Howard L. Davis, of Philadelphia, $5.00 for a cockerel, and $1.50 each for three pullets. I have raised something like 200 chickens from eggs from these three pullets, and I have not seen a wrong feather so far. All have single combs, yellow legs, and they are true to type. Now, it is worth something to find that your stock has been carefully bred so as to preserve the White Leghorn type. I have found them also to be splendid layers; but when I came to selling my young roosters for the table, the buyers all object to the Leghorns, especially if they have been brought up with unlimited range, even though they have plenty of food. The Leghorns, while young, are not the best kind of fowls for the table. I notice in several of the journals a suggestion that we might make the Leghorns a little better for a table fowl, and get just as many eggs, and possibly more, by judicious crossing with some desirable breed. Now, all I have written above is only an introduction to the letter below:

My dear Mr. Root:—I think the inclosed is a very valuable article, and I believe Mr. Warren is quite correct in his statements. I hope you will find it as interesting and instructive as I did, and that you may be able to experiment a little along these lines, as I myself intend to do as soon as the opportunity offers.

South Berkeley, Cal., Nov. 2. W. H. PEARSON.

Below is the clipping alluded to in the above:

THE GENESIS OF A LAYING STRAIN.

In the April *American Poultry Advocate* there was a letter from Mr. F. A. Mason, of Forest Depot, Va., referring to the excellent work done by a pen of twenty White Wyandotte pullets purchased from me last December. The twenty pullets laid 330 eggs, and the aggregate was reduced, so Mr. Mason says, by a snowfall of 14 inches on a level, which checked production for a few days. In the communication was an error which neither Mr. Mason nor Mr. Hunter in his comments on the letter seems to have noticed. The average per pullet for the month of December was given as 10½ eggs each; but if the reader will divide 330 by 20 he will find that the average per pullet was 16½ eggs for the month. Naturally I was gratified at the communication, for the pullets I sold Mr. Mason were not selected for their great laying qualities, but simply that he might have a uniform lot.

In what follows I shall have to be more or less personal; but this article is not intended to be in any sense an advertisement of my White Wyandottes, for I have no White Wyandotte stock or eggs to sell.

Referring to an old diary I find that I made my "debut" in the poultry world Sept. 27, 1897. Before that I had been suffering from the hen fever for some time. My temperature was high, and my pulse far beyond the normal. On my study-table with my Greek lexicon and my commentaries I kept copies of *Farm Poultry*, then edited by Mr. Hunter, which I read persistently and with great profit. No man ever had the disease in a more virulent form than I. To-day I cross the street to avoid meeting a "hen crank;" but then hen cranks were my boon companions and friends.

There was a young man in my parish who had a flock of what he called "White Wyandottes." He had bred White Leghorns for a number of years; but wanting a larger bird he had crossed them with White Wyandotte cockerels. He had done this for two or three seasons. He offered to sell me the pick of his pullets for 75 cents each, and I took up with his offer. One beautiful September evening (how well I remember it after all these years!) I went down to his house, and by the light of a lantern we selected twelve pullets. All I knew of a White Wyandotte then was that they should have white plumage and "double" comb, and on this basis I made my choice. We put the pullets in three shorts-sacks, and I wheeled them home and put them in the hen-house. The next day, Sept. 28, I got an egg. Oct. 19 I bought two more pullets, paying $1.60 for them.

Lay? Well, you never saw any thing like it. Those pullets were wonders. They laid in season and out of season, early and late. Let me give you their record for one week in November, 1897—a week so cold that, according to my diary, the water-pipes in my kitchen froze up and burst: 10, 8, 7, 11, 6, 9, 12—total, 63. From Oct. 1, 1897, to Oct. 1, 1898, they laid 2909 eggs—a total of a little more than 214 eggs apiece.

I did not realize what a gold-mine I had stumbled upon, what a treasure I had accidentally found, and so I came very near destroying a wonderful strain. In a short time the fever took a turn. I ran down to Boston to the great poulty show and saw the kings and queens of poultrydom. When I came back, my faith-

ful pullets, which were laying to beat the band, didn't look so good to me as they did before. I wanted something more aristocratic. And then I went to work and did something that men have been doing from time immemorial—subordinated merit to good looks. I began to send away to noted breeders for high-priced cockerels to "improve" my strain. I improved it with a vengeance. In three years I had in my yards some beautiful birds, so far as feathers and shape were concerned, but they were just ordinary layers. And then two great truths began to filter into my consciousness: 1. The hen that is swift to lay is better than the mighty; and the hen that filled the egg-basket is greater than the one that taketh the blue ribbon in the city. 2. The reason why my pullets were such phenomenal layers was because of the strong infusion of Leghorn blood, amounting to not less than 25 per cent. And then I went to work laboriously and painfully to build up what I had ignorantly destroyed.

And now I give you the great "secret," which is worth dollars to every reader of this paper, but for which I do not charge a cent—*cross-fertilization*. Selection and cross-fertilization are the two methods by which Luther Burbank, the "plant wizard," produces his wonderful creations. One of these methods has been tried in poultry-keeping, but not with perfectly satisfactory results. Look at the Maine experiment station, where the theory of selection has come to such melancholy wreck. After nine years of trap-nesting and breeding from best layers, the station is obliged to confess that the average egg-yield per hen is not so great as when they started. Selection must be supplemented by cross-fertilization to produce the 200-egg hen.

It is a theory of mine that there is a certain maximum egg-production for each breed, and when you exceed this you sacrifice some of the qualities that are characteristic of the breed. In other words, you begin to create a new breed. It is because the qualities inherent in a breed are so much more persistent than the acquired qualities that it is so difficult to improve a breed by selection.

Let me illustrate from another field. All the readers of the *Advocate* have doubtless seen the Percheron horse, that noble animal that we have imported into this country to improve the size and strength of our draft horses. The Percheron is an ideal draft horse, but no one would select him for a driving horse. On the road he could, perhaps, make three to four miles an hour. Now, it is entirely possible that, by careful selection in breeding, the speed of the Percheron could be considerably increased; but it could not be increased without sacrificing some of the grand qualities which he now possesses. Size would have to be reduced, shape altered, the gait changed. The Percheron as we know him now would be gone. In his place would be an animal that is neither one thing nor the other—neither a draft horse nor a trotter. Selection will do great things; but selection carried beyond a given point defeats itself and fails.

The characteristic equine product of the United States is the trotting horse. Here we beat the world. The progenitor of the American trotter was the famous Messenger, who was landed in Philadelphia in 1788. Ever since that time, whenever we have found a trotting horse of established pedigree we have found that one or more of the blood lines ran back to this great fountain head; and the more Messenger strains there are in a pedigree the greater is its esteemed value. It may be laid down as an axiom that there is no great trotter without the Messenger blood.

The distinctive egg strain is the Leghorn. Everybody admits that. We may not like the Leghorn—its small size, its wildness, its incessant movement—but we all concede that when it comes to filling the egg-basket the Leghorn has no superior. Now, it would seem to follow that an infusion of Leghorn blood would be of great benefit in building up an egg-producing strain.

What advantages have I secured by the introduction of a small percentage of Leghorn blood into my White Wyandottes? First, early maturity. The infusion of Leghorn blood accelerates maturity. It makes a great difference in the egg-output for the year whether a hen begins to lay in November or not until March. The twelve hens that comprised my original flock laid the first week in October, 1897, 14 eggs as follows: 1, 3, 1, 2, 4, 1, 3. And the last week of September, 1898, the fourteen hens laid 57 eggs: 7, 7, 7, 10, 6, 8, 12. There was no perceptible slackening in gait until well into October. Here was a steady pull of a year or more, and it is no wonder the egg-yield was phenomenal.

The second advantage is the weakening of the desire for incubation. Leghorns are "non-sitters." This is not literally true, but it approximates the truth. These periodical fits of broodiness greatly reduce the working time of the large hens.

Third, greater activity. The Leghorns are never still except when in the nest or roost. This means that they do not take on fat like other breeds. The tendency of the larger breeds is to become too fat for egg-production. A little Leghorn blood counteracts this tendency.

The two varieties that would seem to offer the greatest possibilities in the way of cross-fertilization are White Wyandottes and White Plymouth Rocks, for they may be crossed without detriment to comb or color. The variety that I have experimented with has been the White Wyandottes, crossing with Rose Comb White Leghorns; but the White Plymouth Rocks would respond equally well. The percentage of Leghorn blood that can be introduced without destroying the Wyandotte or Rock type is about 12½ per cent, or the grandson of a Leghorn male mated to pullets of the chosen variety.

In closing I quote from a letter which has come within a few days, which shows how persistent is the egg-laying habit in my hens, and how they give good accounts of themselves in other hands than mine. It is from the Rev. George E. Lake, of Chelsea, Vt., dated July 23, 1909:

Bro. Warren:—You may have given up all intrrest in the old "hobby," but I still have some of the same breed of hens that I got from you some some four years ago. I still have a little pen of them; and the other day (or days) they laid an egg apiece for two days; and one day since, they laid an egg apiece. They have been laying for nine months. They have not sat. They are still working. I call that good.

Atkinson, N. H. EDGAR WARREN.

I feel so well convinced that the above article is along the line of truth, and something very valuable, that I have about decided to get a White Wyandotte male to put with my strain of White Leghorns down in Florida. In due time I hope to be able to make a report.

SORTING OUT FERTILE EGGS BEFORE THEY GO INTO THE INCUBATOR.

I have read your articles about egg-hatching, and how to tell when the eggs are fertile; but I have not noticed an idea that I have used with good success.

Before "planting" the eggs under biddy I take each one, either by strong lamplight or sunshine, and by holding the egg in one hand and forming a shade over the large end of the egg with the other hand I can see whether it shows fertility or not. If it does, you will see a dark spot, nearly as large as a dime; if not, or if it is a very weak germ, you will see nothing. This spot lies a little to one side of the center of the large end of the egg. By turning it in the hand one can soon learn to detect this place. Of course, not *every* egg will hatch, as sometimes the chick can not get out of the shell, or dies before the hatching time; but the greater per cent always hatch.

Should all drones be destroyed, keeping only those desired for breeding purposes? Of what good are drones to a colony besides fertilizing queens?

Lamberton, Minn., Aug. 20. NELLIE E. SCHUCK.

My good friend, I feel sure you are making a mistake. The Department of Agriculture, Washington, D. C., has issued a bulletin declaring that the germ is microscopic, and can not possibly be seen through the shell of the egg until it has made a start of three or four days. A Mrs. White, of Missouri, has been selling as a secret what you describe—$1.00 for the secret and 50 cents more for a poor cheap egg-tester such as Montgomery Ward & Co. offer for only 10 cents. I sent the money, and made a trial with both sitting hens and an incubator; and then I kept careful count of the fertile eggs and the unfertile. I feel sure the process you describe tells us nothing at all; and yet this woman is at the very present time taking a dollar for what she calls a secret, and she does not even throw in her poor cheap egg-tester. She may be honest in thinking

she has something; but the poultry journals that accept her advertising ought to know better.

In regard to the drones, while it has been suggested that they may be of some value in keeping up the temperature at certain seasons, I believe it is generally agreed that all drones should be destroyed just as soon as their presence is made known, when they are not wanted to mate with queens.

A BIG BROAD-SHOULDERED BROTHER WHO HAS JUST FOUND THE "PEARL OF GREAT PRICE."

Friend Root:—I am taking the liberty of writing you a few lines; and I think that, after you have read all this, you will excuse me for taking up your time with it. I am 31 years old, 6 ft. 4 in. in height, and broad accordingly. Through the evil example of others, and the influence of bad companions (I am sometimes *compelled* to work in a pretty rough crowd, thrashing, etc., and probably have also a natural inclination to be bad), I have been engulfed in the mire and slough of despond till I have wished I were dead, and this life seemed to me a living death, a hell on earth, or almost that. I thank the Lord, however, I have been rescued through a revival here in the little back-country Baptist church—a wonderful revival, and lots of converts for the size of the community. Seemingly the good people who are not converted, but moral in every way (except acknowledging their duty to their Lord), have been far harder to convert than hardened sinners like me. I am very well acquainted with you through your talks in GLEANINGS, which I always read the first thing in the paper. You have helped me, and I believe you will be glad to hear from me and forgive my taking up your time. I feel so thankful, I would far rather be dead than back in the old way. I am not married; live at home with my parents, who are church members. I have an apiary of 135 colonies or so at present, and have noticed you tell about the buckwheat country in York State; but it is not here, and I can't find where it is exactly—that is, where you mention it in the A B C book. I should like to know, as some time I may want a home of my own, as I have always worked hard, and saved quite a figure toward that ambition. I want to get in the best bee location I possibly can.

May the Lord bless you, and let you live long to continue your good work in GLEANINGS, and remember me in your prayers. LEROY LLOYD.

Rathbone, N. Y., Oct. 23.

Dear brother, I always have time to listen to any one like yourself who has groped his way through darkness out into the light of the gospel of Christ Jesus. You have made a start all right; but your old friend A. I. Root will tell you to hunt up some good Christian woman—that is, if you have not done it already—and start a Christian home. My son Ernest has been through the York State buckwheat-fields much more than I have, and he says the localities where buckwheat is grown so largely are pretty well overstocked already. Don't you believe you can start buckwheat-growing where you are? Many thanks for your kind words; and may you never be turned back or get out of the straight and narrow path.

SOME SUGGESTIONS IN REGARD TO ETERNAL PUNISHMENT, ETC.

A. I. Root:—I have just received GLEANINGS for Sept. 1, and have read nearly all of it, especially Our Homes; and in closing I notice that you say you would rather have the advice of a common every-day person who has good common sense than the opinions of the learned divines. Upon this ground I address you, as I have not seen a schoolroom since 12 years of age except the outside.

I want to congratulate you for the statement on page 549 in regard to eternal punishment. You say "unwise, and perhaps not exactly orthodox;" but you spoke the truth as you believe it, and that is wise, and *not* unwise, even if it is not orthodox.

I want to throw a little light upon that subject as I believe it. 1. Who is eternal? God, the eternal Father. 2. Who is everlasting? God, the eternal Father. Now, suppose that we substitute the word God for "eternal" and "everlasting." What a different meaning it would have! Is the punishment eternal and everlasting? Yes. But not to the individual.

We have our penitentaries and prisons—yes, and they stay there from year to year; and places of confinement have existed since the creation; and persons all down the stream of time, who have broken man-made laws and the laws of God have been incarcerated therein; and when they have paid the penalty they have been released; but the *prison-house* is eternal, but the punishment is not eternal, hence the difference. HENRY J. WALK.

Salt Lake City, Utah, Sept. 27, 1909.

My good brother, I shall have to correct your quotation a little in your opening sentence. As you have it, it might look as if I had but little faith in a theological education. What I said on page 550, Sept. 1, is as follows:

I have a feeling, in closing, that, as I have not studied theology, I am out of my beat; but I have many times thought I would rather have the advice of a common every-day person who has *good sound common sense* than some of the opinions of the learned doctors of divinity.

You will notice the expression in the second line, "many times," and also the word *some* in the next to the last line. God knows I have had abundant reason to have great faith in our schools and colleges, and especially our theological schools. In fact, I have received great benefit from each and every pastor who has filled the pulpit in our church; and although I never went to college myself, I have had very great cause indeed to thank God that I was able to send all of our sons and daughters to get more or less of an education. Our two boys have helped me and prompted me, and are doing it even yet, just because they received an educational training that I did not have. Many thanks for your suggestions, notwithstanding.

WONDERBERRIES IN ILLINOIS.

Last spring I sent to John Lewis Childs for a packet of the wonderberry. I planted the seeds in the house and got some nice big strong plants. I then put them in the garden and took good care of them. This is what I got: Berries all the time, some green some ripe, but never enough ripe ones at one time to fill a teacup half full. Now, I don't think they are *exactly* like any thing we have around here; but are so near like the berries that grow in the cornfields that I would just as soon have some of them. J. S. KENDALL.

Chimung, Ill., Oct. 8.

WONDERFUL "WONDERBERRY," ETC.

I am sending you under separate cover a sample of the wonderful "wonderberry," and you will find also a slip of the belladonna weed. There is not a great lot of difference. Mother thinks it the same that the Iowa Seed Co. put out years ago by the name of *Nebraska stubbleberry*.

As to those advertisements, keep right after them and I will help you where I can. If you are a reader of *Collier's Weekly* you have seen how they are getting after them in good shape. A. J. BRECKEL.

W. Toledo, Ohio, Aug. 23.

A CORRECTION.

On p. 788 the senior editor meant to say his fenced acre cost $150 instead of $1.50.